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Medical Journal and Record

A NATIONAL REVIEW OF MEDICINE AND SURGERY

EDITED BY
GREGORY STRAGNELL, M. D.

VOLUME CXX

JULY TO DECEMBER, 1924, INCLUSIVE

NEW YORK
A. R. ELLIOTT PUBLISHING CO.
1924

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INDEX TO VOLUME CXX.

PAGE.

ABDOMEN, cutaneous hyperesthesia in acute disease of..... 360
treatment of acute conditions of..... 361
upper, pain in 469
postoperative infection of..... 473
Abdominal operation for retroversion, afterresults of 518
spasm with epidemic encephalitis..... 468
Abdominoscopy 360
Abortion 91
experience with one thousand cases..... 520
febrile, treatment of..... 521
rapidity of sedimentation of erythrocytes in 521
Abscess, brain, with pathological observations 151
Acetonemia in children..... 626
Acid, acetylsalicylic, effect of, on cardiac irritability 255
free, determination of, in gastric juice by titration of the indicator..... 362
lactic, excretion of, in carcinosis..... 470
Acidosis and rickets..... 625
of children, dry diet in..... 489
Addison, Thomas, biographical sketch of.. 339
Addison's anemia and subacute combined degeneration of spinal cord..... 468
Adenomata, encapsulated, of thyroid..... 197
Adrenal virilism complicated by diabetes insipidus 573
Adrenalin, absorption of..... 255
in manual delivery of placenta..... 197
Age and physical labor..... 558
Ahlswede, H. Edward. (See supplement index.)
Ala deformity, operation for..... 72
Alcohol and carbolic acid..... 259
Alcoholic intoxication and carbon dioxide.. 185
mental diseases 239
poisoning 353
Alcoholism, mental states in.....239, 414
Alexander-Adams operation, results with.. 520
Allergic high blood pressure controlled by epinephrin 596
Allgemeine Krankenhaus 242
Almour, Ralph. (See supplement index.)
Alum oil spray, in nasopharyngeal conditions 26
Amenorrhea, constitutional significance and treatment of 520
American Heart Association..... 501
Amputations, new retractor for..... 171
Amster, J. Lewis. (See supplement index.)
Anaphylaxis 41
in relation to clinical medicine..... 110
Andrews, Edmund. Choice of operation for inguinal hernia 57
Anemia in nephritis with nitrogen retention 467
chronic, and related conditions 421
desiccated spleen and red bone marrow in treatment of..... 281
pernicious 467
and sprue 467
in relation to hemolytic disorders..... 467
platelet count in by Thomsen's method 468
with degeneration of spinal cord..... 468
sickle cell 467
Anemias, of childhood, germanium dioxide in treatment of..... 468
Anesthesia by chloroform in asphyxia of child during delivery 521
ethylene 523
in bad operative risks 522
in intracranial surgery 522
intravenous 523
local, and goitre risk..... 198
for dental, oral, nose, and throat surgeons 220, 279
in minor gynecological operations.... 518
of splanchnic nerve..... 151
paravertebral, in kidney surgery..... 523
pure nitrous oxide oxygen..... 523
regional, in gynecology..... 522
sacral 523
spinal 523
Aneurysm of renal artery..... 254
Angina pectoris 142
blood pressure and heart action in sleep and dreams in relation to.... 253
surgery in 311, 574
syphilis in 574
Aniline dyes in treatment of infections.... 437
Animal and man..... 84
Animals, diseases of..... 183
Ankle joint, compression leverage fractures of 50
Ankylosis of joints, mobilization in treatment of 306
Anomalies in laryngology 223
of intestinal rotation..... 363
Anthrax, neosalvarsan in treatment of... 335

PAGE.

Anthropology of human eye..... 82
Antidote for arsenic, bismuth, and mercury poisoning 482
Antimony tartrate in schistosomiasis (Bilharzia disease) 229
Antiseptic, intestinal, use of perchlorides of mercury and iron as..... 363
Antitoxin, diphtheria, hemolytic and agglutinative properties of..... 51
Antrum, carcinoma of..... 414
Aortic regurgitation, life expectancy with. vasodilatation in, and capillary pulsation 574
Aortitis 533
syphilitic 574
Apfel, Harry. Hypertrophic pyloric stenosis in an infant 17
Appendicitis, acute, in children..... 625
Appendix, acutely inflamed, pathology of.. 360
Aristotle's views on the kidney.....28, 78
Aromatics 32
Arsenic poisoning, antidote for..... 482
Arsenical preparations in treatment of syphilis 126
Arsphenamine in cure of syphilis in rabbit. 304
Arteriosclerosis 574
and diabetes 470
and hyperpiesis 253
Artery, renal, aneurysm of..... 254
Articular rheumatism and malaria 575
Arthritis and focal infection..... 542
deformans, colloidal sulphur in....24, 75
gonorrheal, with purulent fluid in synovial space 428
in adult, with splenomegaly and leucopenia 575
Arthroplasty 306
Asphyxia of child during delivery, chloroform anesthesia in..... 521
Asthenia and syphilitic polyglandular disturbances 290
Asthma, prophylactic gas filtering ventilator for 164
Atomizer in nose and throat work..... 541
Automobiles, dangers of 342
Autopsies following carbon tetrachloride treatment 598

BAAR, Gustav. The Allgemeine Krankenhaus 242
Bacillus, foot and mouth disease..... 244
Back, pain in..... 149
Bacteria in urine of children and pyelitis.. 624
intestinal, production of formaldehyde by 360
invasion of uterus and its contents.... 519
Bacterins, value of..... 74
Bag, hydrostatic, in induction of labor... 415
Barker, Lewellys F. Social significance of medicine 53
Barnes, George Edward. Alum oil spray and Eustachian and nasopharyngeal vaporizing tubes 26
Barro Colorado Island Research Laboratory 36, 38
Bartle, Ira D. Excess blood sugar in connection with certain surgical conditions 207
Basedow's disease, extract of myxedematous goitre in treatment of..... 197
Bastedo, Walter A. Our northern chronic dysenteries 201
Bathing, history of..... 78
Beccari process of garbage disposal..... 132
Bel, George S. Aortitis..... 533
Bell, F. McKelvey. Aniline dyes in the treatment of infections 437
Bellevue Hospital, surgery in, fifty years ago 551
Benjamin, Harry. Influence of röntgen rays on endocrine glands..... 585
Benzoin, colloidal, reaction of in cerebrospinal fluid 304
Besser, Herman. (See supplement index.)
Biddle, A. Graham. Modern cataract operations 434
Bienfield, Henry H. (See supplement index.)
Bile changes caused by pressure obstacle to secretion 363
direct examination of, in gallbladder lesions 9, 60
in metabolism 362
total 363
Bilharzia, papillomatous, of rectum..... 361
antimony tartrate in treatment of..... 229
Biliary drainage, nonsurgical 69

BIOGRAPHIES:
Addison, Thomas 339
Aristotle 338

PAGE.

BIOGRAPHIES:
Brown-Séquard, Charles Edouard..... 30
Chervin, Nicolas 232
Graham, James 190
Hall, Granville Stanley 23
Hunter, John 129
Keats, John 284
Jenner, Edward 80
Laennec, René Théophile Hyacinthe 286
Lister, Lord 444
Marat, Jean Paul 180
Rush, Benjamin 393
Scharlieb, Mary 238
Schweitzer, Albert 606
Virchow, Rudolf 499
Wesley, John 180

Biologist, Aristotle as 338
Bishop, Louis Faugères. (See supplement index.)
Bismuth in treatment of syphilis....547, 600
poisoning, antidote for..... 482
Bland, P. Brooke. Radium therapy in gynecology 101, 156
Blauner, Samuel A. Interpretative value of the physical signs of the heart in acute rheumatic endocarditis in children.... 485
Blood cells, white, induced increase of, effects on infection 580
changes, chemical, after intestinal obstruction 360
chemistry, effect of ultraviolet light on.. 589
glycosis in, with relation to diabetes.... 307
plasma in infancy, significance of protein factions in 626
pressure, abnormalities of, associated with tinnitus aurium..... 574
allergic high, controlled by epinephrin 596
and methyl guanidine 237
and sugar metabolism 574
effect of methyl guanidine on..... 255
high 89, 565
and cerebral hemorrhage 566
osmotic pressure of blood pressure in pathogenesis of 254
in sleep and dreams, relation to hemorrhages, angina, and sudden death.. 253
relation of to amount of renal tissue.. 575
response to sodium nitrite, influence on water excretion 255
proteins, osmotic pressure of, in pathogenesis of edema and of high blood pressure 254
sedimentation 459
serum, calcium content of, effect of thyroidectomy upon 196
sugar and diabetes 470
and sugar in cerebrospinal fluid of the insane 412
content in diabetes.....200, 433
estimations omitted in insulin treatment of diabetes mellitus 307
excess, in certain surgical conditions.. 207
vascular system of extremities, diseases of 252
Boas, Ernst P. (See supplement index.)
Boas, Ernst P., and Livingston, W. H., Chronic diseases 153
Bone, giant cell tumor of 469
marrow, red, in treatment of anemia.... 281

BOOK REVIEWS:
Abbott, Maude E., and Coupal, Major James I. International Association of Medical Museums, and Journal of Technical Methods 409
Abderhalden, Emil. Handbuch der biologischen Arbeitsmethoden, Abt IV. Handbuch der biologischen Arbeitsmethoden. Abt XII..... 463
Aboulker, Henri. Clinic et Iconographie Medico-Chirurgicales des maladies de la face et du cou..... 620
Abt, Isaac A. Pediatrics, Volume IV.. 618
Achard, Ch. Aperçu de la physiologie et de la pathologie générales du système lacunaire 300
Amrein, O. Das Hochsgebirgsklima.... 462
Lungentuberkulose 513
Annals of Röntgenology, IV. Normal Bones and Joints 515
Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1923 408
Anonymous. Nightshade 571
Association des ecrivains combattants. Anthologie des ecrivains morts à la guerre 623
Bagger, Eugene S. Psychographology.. 411
Bainbridge, William Seaman. El Problema del Cancer..... 461

BOOK REVIEWS: PAGE.

Barker, J. Ellis. Cancer—How It Is Caused and How It Can Be Prevented 513
Baudouin Charles. The Birth of Psyche Psychoanalysis and Æsthetics 406
Béclère, Henri, Duval, Pierre, et Roux, Jean-Charles. Etudes médico-radiochirurgicales sur le duodénum..... 355
Bendix, Bernhard. Lehrbuch der Kinderheilkunde für Aerzte und Studierende 618
Bertwistle, A. P. Descriptive Atlas of Radiographs of the Bones and Joints for Students and Practitioners..... 300
Bezancon, Fernand, and de Jong, S. I. Précis de pathologie médicale..... 44
Bianchi, Martha Dickinson. The Life and Letters of Emily Dickinson.... 95
Bing, Robert. Lehrbook der Nervenkrankheiten 407
Birk, W., und Schall, L. Strahlenbehandlung bei Kinderkrankheiten... 618
Bleuler, Eugen. Textbook of Psychiatry 144
Bliss, Hubert E. J. Bailliére's Popular Atlas of the Anatomy and Physiology of the Male Human Body..... 301
Blühdorn, K. Säuglingsheilkunde der täglischen Praxis 619
Blumenfeld, F., and Katz, L. Handbuch der Speziellen des Ohres und der Oberen Luftwege..... 45
Bordeaux, Jeanne. Dusé of the Beautiful Hands 517
Borst, Max. Allgemeine Pathologie der malignen Geschwülste 515
Brand, A. T., and Keith, J. R. Clinical Memoranda for General Practitioners 568
Brandeis, Julian Walter. Munchausen, M.D. 516
Brink, Louise. Women Characters in Richard Wagner 464
Brugsch, Th. Ergebissne der gesamten Medizin. Fünfter Band, Heft 1, 2, 3, und 4..... 462
Brupbacher, F. Wann ist eine ärztliche Abtreibung rechtswidrig? 512
Bulkley, L. Duncan. Cancer of the Breast 92
Burt, Struthers. The Interpreter's House 195
Burwinkel, Oskar. Die Angina Pectoris 248
Calkins, Ernest Elmo. Louder Please! The Autobiography of a Deaf Man 571
Cammidge, P. J. New Views on Diabetes Mellitus 514
Chapman, Frank E. Hospital Organization and Management..... 145
Charles, C. H. Love Letters of Great Men and Women..... 303
Chiray, M., et Lehon, J. Le Tubage duodénal 353
Clendening, Logan. Modern Methods of Treatment 568
Clogne, Réne. Guide pratique d'analyses de chemie biologique..... 463
Cohn, Isidore. Normal Bones and Joints 515
Collins, Dale. Ordeal 357
Collins, Joseph. Taking the Literary Pulse 621
Colwell, Hector A. Radium, X Rays and the Living Cell, with Physical Introduction 569
Copeland, Royal S. The Health Book. 47
Cotton, Frederic J. Dislocations and Joint Fractures 461
Coupal, Major James I., and Abbott, Maude E. International Association of Medical Museums, and Journal of Technical Methods..... 409
Craig, Frank A. Diseases of Middle Life 193
Crofton, W. M. Outline of Endocrinology 356
de Jong, S. I., and Bezancon, Fernand. Précis de pathologie médicale..... 44
de Schweinitz, George E. Diseases of the Eye 460
Dolonne, A. Selfhealing by Autosuggestion 93
Douglas, C. G. Human Physiology.... 249
Drew, Lillian Curtis. Individual Gymnastics 570
Dünner, L., und Neumann, R. Perkussion, Auscultation, und Palpation der Brust und Bauchorgane. Ein praktischer Grundriss 356
Duval, Pierre, Roux, Jean-Charles, et Béclère, Henri. Etudes médico-radiochirurgicales sur le duodénum..... 355
Einhorn, Max. Die Duodenal-Sonde und Ihre Anwendungsmöglichkeit 353
Evans, Willmott H. Diseases of the Breast 193
Fabre, Lucien. Rabeval 303
Fiessinger, Noël. Les Ferments des leucocytes en physiologie, pathologie et thérapeutiques générales.... 620
Finot, André et Lian, Camille. L'Hypertension artérille 248
Fischer, H. G., and Company, Inc. Lectures on Electrophysiotherapy.... 409
Fröderström, Harald. Om Psykisk Undermalighet och Sinnessjukdomar... 407

BOOK REVIEWS: PAGE.

Gardiner, Frederick. Handbook of Skin Diseases 460
Garnett, David. The Man in the Zoo.. 357
Gibbs, Philip. Heirs Apparent..... 250
The Middle of the Road..... 250
Goodwin, John C. Insanity and the Crinimal 144
Goyena, Juan Raoul. Gastropatias de Origen Renal 353
Graham, George. Pathology and Treatment of Diabetes Mellitus..... 514
Grieg, J. Y. T. Psychology of Laughter and Comedy 250
Griffits, Charles H. Fundamentals of Vocational Psychology 251
Groedel, Franz M. Lehrbuch und Atlas der Röntgendiagnostik in der Inneren Medizin und Ihren Grenzgebieten 355
Guevara, Manuel. Psicoanalisis 144
Gwathmey, James Tayloe. Anesthesia.. 249
Haldane, J. B. S. Dædalus or Science and the Future..... 621
Harrop, George A., Jr. Management of Diabetes 193
Hinkle, Beatrice M. Recreating of the Individual 144
Hofstätter, R. Uber eingebildete Schwangerschaften 512
Holt, L. Emmett. The Happy Baby... 618
Hornibrook, F. A. Culture of the Abdomen 355
Horowitz, Philip. Diabetes 93
Hughes, Hatcher. Hell Bent fer Heaven 95
International Clinics, Volume IV..... 94
International Medical Annual, 1924.... 193
Jacobi, Mary Putman. Life and Letters 95
Jeffrey, G. Rutherford. Common Symptoms of an Unsound Mind..... 144
Jesionek, A., und Mravek, Dr. Atlas und Grundriss der Hautkrankheiten 619
Jones, Ernest. Essays in Applied Psychoanalysis 406
Jordon, Alfred. Chronic Intestinal Stasis 512
Joslin, Elliott P. Diabetic Manual..... 409
Kantor, John L. Treatment of Common Disorders of Digestion..... 45
Katz, L., and Blumenfeld, F. Handbuch der Speziellen des Ohres und der Oberen Luftwege 45
Keith, J. R., and Brand, A. T. Clinical Memoranda for General Practitioners 568
Kelly, Ethel. Weeds 303
Kerley, Charles Gilmore. What Every Mother Should Know About Her Infants and Young Children..... 356
Kingsbury, F. A., and Kornhauser, A. W. Psychological Tests in Business 95
Klages, Ludwig. Von Wesen des Bewusstseins 45
Kolmer, John A. Practical Textbook of Infection, Immunity and Biological Therapy 249
Kornhauser, A. W., and Kingsbury, F. A. Psychological Tests in Business 95
Kraus, Rudolph und Uhlenhuth, Paul. Handbuch der mikrobiologischen Technik. Band II und III..... 301
Kretschmer, Ernst. Uber Hysterie.... 300
Krohn, William O., and Singer, H. Douglas. Insanity and the Law..... 45
Kronfeld, Arthur. Psychotherapie 144
LaMotte, Ellen N. The Ethics of Opium 302
Landis, Henry R. M., and Norris, George W. Diseases of the Chest and the Principles of Physical Diagnosis.. 248
Laurens, Georges. Chirurgie de l'oreille, du pharynx, et du larynx..... 44
Lawes, Lewis E. Man's Judgment of Death; an Analysis of the Operation and Effect of Capital Punishment Based on Facts, Not on Sentiment 411
Lawrence, D. H. Birds, Beasts, and Flowers 410
Kangaroo 410
Sons and Lovers..... 410
Lehon, J. et Chiray, M. Le Tubage duodénal 353
Lewinski-Corwin, E. H. The Hospital Situation in New York..... 298
Lewis, Sir Thomas. Clinical Electrocardiography 248
Lian, Camille et Finot, André. L'Hypertension artérielle 248
Libendinsky, Iury. A Week..... 621
Little, George W. Dr. Little's Dog Book 517
Lutembacher, R. Les Troubles fonctionneles du cœur..... 568
McBride, P. Psychoanalysts Analyzed. 46
McFarland, Joseph. Fighting Foes too Small to See..... 299
McLean, McDugald. Tuberculosis 44
MacKenzie, Sir James. Angina Pectoris 619
Mallory, Frank B., and Wright, James B. Pathological Technic 620
Mannix, W. F. The Memoirs of Li Hung Chang 570
Marlow, F. W. Relative Position of Rest of the Eyes and the Prolonged Occlusion Test 569

BOOK REVIEWS: PAGE.

Mathews, Basil. Wilfred Grenfell, the Master Mariner; a Life of Adventure on Sea and Ice..... 570
Maurois, André. Ariel, The Life of Shelley 622
May, Charles H. Manual of Diseases of the Eye 460
May, James V. Mental Diseases..... 407
Mayo Clinic and Mayo Foundation, Collected Papers of..... 299
Meagher, John F. W. Study of Masturbation and Its Reputed Sequelæ. 250
Medico-Psychological Association. Handbook for Mental Nurses..... 144
Mellish, M. H. Collected Papers on the Mayo Foundation 299
Mense-Kassel, Carl. Handbuch der Tropenkrankheiten 298
Meunir, Léon. L'Etat dyspeptique.... 355
Miller, Charles Conrad. Cosmetic Surgery 299
Mills, Arthur. The Yellow Dragen.... 622
Mosher, Clelia D. Woman's Physical Freedom 302
Moynihan, Sir Berkeley. Gastric and Duodenal Ulcer 353
Mravek, Dr., und Jesionek, A. Atlas und Grundriss der Hautkrankheiten 619
Muir, John. Manual of Practical X Ray Work 460

NATIONAL HEALTH SERIES:

Armstrong, Donald B. Community Health 463
Bigelow, Maurice A. Adolescence... 463
Bolt, Richard A. The Baby's Health 463
DeNormandie, R. L. The Expectant Mother 463
Frankel, Lee K. Health of the Worker 463
Galloway, T. W. Love and Marriage 463
Gillett, Lucy H. Food for Health's Sake 463
Hart, T. Stuart. Taking Care of Your Heart 463
Howell, W. H. The Human Machine 463
McLaughlin, Allan J. Personal Hygiene 463
Means, Lenna L. Exercises for Health 463
Noyes, Clara D. Home Care of the Sick 463
Shaw, Henry L. K. Young Child's Health 463
Snow, W. F. Venereal Diseases.... 463
Tobey, James A. The Quest for Health 463
Williams, Linsly R. Tuberculosis.. 463
Williams, Frankwood E. Your Mind and You 463
Winslow, C. E. A. Man and the Microbe 463
Wood, Francis Carter. Cancer 463
Wood, Thomas D. The Child in Health 463

Neumann, R., und Dünner, L. Perkussion, Auscultation, und Palpation der Brust und Bauchorgane. Ein praktischer Grundriss 356
Newmayer, S. W. Medical and Sanitary Inspection of Schools..... 194
Nicholson, Harold. Byron: The Last Journey, April 1823-April 1824.... 410
Nightshade 571
Nobécourt, P. Clinique médicale des enfants, affections de l'appareil respiratoire 619
Norris, George W., and Landis, Henry R. M. Diseases of the Chest and the Principles of Physical Diagnosis 248
Nouveau traité de médicine. Fascicule XI 301
Oppenheimer, Carl. Handbuch der Biochemie des Menschen und der Tierce 461
Ostwald, Wo. Manipulations de chemie colloidale 409
Page, Calvin S. Rex, the Life Atom.. 302
Pardee, Harold E. B. Clinical Aspects of the Eelectrocardiogram..... 248
Pierce, Frederick. Mobilizing the Midbrain 145
Pla y Armengol, R. et Ravetllat, Joaquin. Le Bacteria de la Tuberculosis..... 569
Pearson, Edmund Lester. Studies in Murder 251
Poole, Ernest. The Avalanche..... 302
Pound, Roscoe. Spirit of the Common Law 145
Purves-Stewart, Sir James. Diagnosis of Nervous Diseases 407
Radcliffe, W. H. Magic for Amateurs. 303
Ransom, Stephen W. Anatomy of the Nervous System 145
Rathbone, Cornelia Kate. Darkened Windows 146
Ravetllat, Joaquin, and Pla y Armengol, R. Le Bacteria de la Tuberculosis 569
Reynolds, Edward. Fertility and Sterility in Human Marriages..... 192
Richardson, Dorothy. The Book of Blanche 94

BOOK REVIEWS: PAGE.

Rigg, George B. The Pharmacist's Botany 461
Rinehart, Stanley M. Common Sense of Health 251
Rogers, Leigh. Wine of Fury..... 621
Romain, Jules. Eyeless Sight..... 147
Rose, Robert Hugh. Eat Your Way to Health 299
Rosny, J. H. The Giant Cat..... 516
Rossiter, Frederick M. The Romance of a Living Temple..... 251
Roux, Jean-Charles, Béclère, Henri, et Duval, Pierre. Etudes médico-radiochirurgicales sur le duodénum..... 355
St. Mary's Hospital. The Operating Room 301
Saleeby, C. W. Sunlight and Health.. 93
Savage, Henry. Marleian Miscellany... 411
Schall, L., und Birk, W. Strahlenbehandlung bei Kinderkrankheiten.. 618
Schellberg, O. Boto. Colonic Therapy in the Treatment of Disease..... 47
Schleich, Karl Ludwig. Besonnte Ergangenheit 620
Schmidt, Hans. Moderne Biologie.... 356
Schultz, Werner. Pathogenese und Therapie der hämorrhagischen Diathesen mit besonderer Berücksichtigung der praktisch wichtigen Fragen 408
Schwalbe, J. Irrtümer der Allgemeinen Diagnostik und Therapie sowie deren Verhütung 194
Scott, Evelyn. Escapade. An Autobiography 410
Shaffer, Newton Melman. Selected Essays on Orthopedic Surgery..... 407
Sherman, G. H. Physician's Manual of Vaccine Therapy 46
Siemans, Hermann W. Race Hygiene and Heredity 356
Sinclair, May. The Dark Night..... 357
Singer, H. Douglas, and Krohn, William O. Insanity and the Law..... 45
Small, Albion Woodbury. Origins of Sociology 465
Smith, G. Elliott. Evolution of Man... 250
Smith, Hester Travers. Psychic Messages from Oscar Wilde..... 147
Smith, S. Calvin. How is Your Heart? 621
Stekel, Wilhelm. Nervöse Angstzustände und Ihre Behandlung..... 463
Studies from the Rockefeller Institute for Medical Research, Volume XLVIII 146
Suckow, Ruth. Country People..... 146
Sudhoff, Karl. Theophrast von Hohenheim gen. Paracelsus Sämtliche Werke 146
Sullivan, W. C. Crime and Insanity.. 95
Suner, Enrique. Physiopathologie de l'appareil digestif du nourrisson.... 619
Surgical Clinics of North America..... 94
Taylor, R. Tunstall. Surgery of the Spine and Extremities 300
These Eventful Years, the Twentieth Century in the Making..... 358
Thomson, Sir St. Clair. Tuberculosis of the Larynx 44
Thorek, Max. Human Testis..... 249
Tormay, Cécile. An Outlaw's Diary. Vol. I and II..... 621
Transactions of the American Proctologic Society 409
Turner, A. Logan. Diseases of the Nose, Throat and Ear for Practitioners and Students..... 298
Twentieth Century in the Making..... 358
Uhlenhuth, Paul, und Kraus, Rudolph. Handbuch der mikrobiologishen Technik, Band II und III..... 301
U. S. Public Health Service. Abstracts Secured in the Compilation of Venereal Disease Information and on File in the Division of Venereal Diseases of the U. S. Public Health Service 194
Van Vechten, Carl. The Tattooed Countess 464
Verga, Giovanni. Little Novels of Sicily 464
Maestro Don Gesualdo..... 46
Walsh, William S. Mastery of Fear.... 95
Walter, Herbert Eugene. Genetics..... 192
Walters, F. Rufenacht. Domiciliary Treatment of Pulmonary Tuberculosis 462
Weber, Joseph J. First Steps in Organizing a Hospital..... 145
Webster, Col. William. Science and Art of Anesthesia..... 192
Weed, Lieut. Col. Frank W. Medical Department of the United States Army in the World War, Volume V: Military Hospitals in the United States 194
Weil, Arthur. Internal Secretions..... 192
Wharton, Edith. Old New York..... 622
Whiting, Arthur. Aids to Medical Diagnosis 146
Whitla, Sir William. Dictionary of Treatment 461

BOOK REVIEWS: PAGE.

Wickham, Elizabeth H. Maternity Nursing in a Nutshell..... 299
Wilson, R. M. How Our Bodies Are Made 46
Wintz, Hermann. Die Roentgenbehandlung des Uteruskarzinoms..... 92
Wright, James B., and Mallory, Frank B. Pathological Technique 620

Bones and joints. (See supplement index.)
Bonifield, C. L. Medical education..... 1
Boorstein, Samuel W. (See supplement index.)
Boston, L. Napoleon. Auscultatory percussion and palpation..... 367
Botulism 117
central nervous system in..... 468
Bragman, Louis J. Medical wisdom of O. Henry 177
Brahdy, M. Bernard. (See supplement index.)
Brain, abscess of..... 151
hydatid cyst of..... 73
venous trunks at base of, in relation to thymus 574
Breast, cancer of, and pregnancy..... 414
carcinoma of 96
gumma of 96
inflammatory diseases of..... 314
tissues, hyperplasia of..... 469
Breech presentations, prophylactic external version 415
Brimstone, therapeutic virtues of..... 182
Bronchial asthma, in relation to hay fever 49
fistula closed by radium..... 590
Brown, Sanger, 2nd. (See supplement index.)
Brown-Séquard, Charles Edouard, biographical sketch of 30
Bryant, W. Sohier. Prostheses in middle ear deafness 205
Buchanan, J. Arthur. Iodine in treatment of hyperthyroidism 599
Burns, linimentum calcis chlorinatæ in treatment of 389
Busch, Werner. (See supplement index.)
Bush, A. D. (See supplement index.)
Byrd, Hiram. (See supplement index.)

CALCIUM content of blood serum, effect of thyroidectomy upon..... 196
Canal, cardiovertebral, of fetus, pressure changes in 415
Cancer. (See supplement index.)
and gastric ulcer..... 83
campaign against 244
cotton spinners' 454
gastric, end results in operations on.... 363
of breast, and pregnancy..... 414
of colon, possible causes and treatment 84
permanent cures following operation... 96
problem and health administrator..... 184
Capillary pulsation and nasodilatation in aortic regurgitation 574
Carbolic acid and alcohol..... 459
Carbon dioxide and alcoholic intoxication.. 185
monoxide and dioxide..... 379
tetrachloride treatment 598
Carbuncle, magnesium sulphate in treatment of 389
Carcinoma, influence of nourishment on.. 98
of antrum 414
of breast 96
of duodenum 96
of gallbladder 414
of rectum 414
of small intestine, lymph glands in... 96
Carcinosis, excretion of lactic acid in.... 470
Cardiac irritability, effect of acetylsalicylic acid on 255
neuroses, diagnosis and treatment of... 255
nutrition, actual and possible factors in 253
Cardiology 252
Cardiopaths in pregnancy and labor..... 518
Cardiorraphy in acute injuries..... 254
Cardiovascular conditions 253
disease, prognosis in 254
system. (See supplement index.)
Carotid, phlegmon of..... 403
Carriers, hydrophobia 591
Carter, C. Edgerton. Deficiency of the halogens in modern dietetics.....174-226
Carter, William Wesley. (See supplement index.)
Cartilage, internal semilunar, sequelæ after operation for 306
Cataract, importance of internal secretions in 573
modern operations for..... 434
Cell growth, influence of lead on..... 96
Cerebral hemorrhage and high blood pressure 566
herniæ, congenital, treatment of..... 151
Cerebrospinal fluid and hereditary syphilis in the insane, blood sugar in..... 412
passage of iodides into..... 469
reaction of colloidal benzoin in..... 304
Cerebrum, pneumoventricle of..... 150

PAGE.

Cervical canal, dilatation of, by artificial relaxation of muscle 521
sympathetic and vagus nerves, communication between 469
Cæsarean section, transperitonial cervical 415
Chervin, Nicolas, biographical sketch of.. 232
Chest, pain in..... 469
Children, acetonemia and volvulus of small intestine in 625
acute appendicitis in 625
anemias of, treated by germanium dioxide 468
bacterial count of urine and pyelitis in 624
diseases of 610
and heredity 624
dry diet in acidosis of..... 489
heart in rheumatic endocarditis of..... 484
impetigo contagiosa in..... 626
pyelitis in 624
school, health of 34
Chlorine gas administered without special apparatus 225
therapeutic use of 43
Chloroform anesthesia in asphyxia of child during delivery 521
Cholangitis lenta 361
treatment of 333
Cipes, Bernard J. Diseases of maxillary sinus from viewpoint of dentist..... 582
Claudication, intermittent, surgery in..... 602
Clinic, diagnostic, endocrine..... 197
Clinics, venereal disease, and social workers 35
Clouting, Charles A. Aristotle as a biologist 338
The poet Keats 284
Clute, Howard M. Upper abdominal postoperative infection 473
Cohen, Samuel. Some anomalies in laryngology 223
Cold, common 577
Colon, cancer of, possible causes and treatment 84
Condurango, fluid extract of..... 283
Congenital defects of skin and scalp in newborn 626
dislocation, operative treatment of..... 306
pyloric stenosis and Rammstedt-Weber operation 361
Constitution, individual, and endocrine glands 573
Consultation, Jerome Cardan in..... 340
Cornwall, Edward E. Dietetic treatment of obesity 124

CORRESPONDENCE:
Geneva letter.....41, 349, 403, 455, 564
Latin America letter
143, 188, 247, 297, 351, 404, 456, 510
London letter
39, 88, 139, 244, 297, 348, 454, 508, 564
Paris letter
89, 140, 191, 246, 295, 402, 508
South Africa letter..... 566
Vienna letter.....90, 141, 188, 245, 294
Washington letter 42, 190
Coryza, prophylactic gas filtering ventilator for 164
Craniovertebral canal of fetus, pressure changes in 415
Cranium, injuries to..... 468
Crises in disease, evolution of doctrine of 442-497
Cumston, Charles Greene. (See supplement index.)
Arsenical preparations in the treatment of syphilis 126
Historical evolution of the doctrine of crises in disease.....442-497
History of diabetes 336
Treatment of bubonic plague..... 26
Cunningham, John H. Renal infection... 322
Cyst, hydatid brain..... 73
Cysticercus sarcoma, susceptibility to..... 470
Cystitis, postoperative, intravenous injections of urotropin solution in..... 229
Cystoscopy 316

DEAFNESS, middle ear, prostheses in 205
Death, intrauterine, of fetus carried past term 521
sudden, blood pressure and heart action in sleep and dreams in relation to.... 253
Decholesterinization 595
Dental surgery, local anesthesia in.....220-279
Dentifrice, value of..... 136
Dentist's viewpoint of treatment of diseases of maxillary sinus 582
Deutschman, D. (See supplement index.)
Diabetes 351
and blood sugar 470
and arteriosclerosis 470
and infantilism treated with insulin.... 470
and pregnancy 455
blood sugar content in..... 433
effect of exercise upon..... 307
history of 336
sugar content of arterial and venous blood in 200

PAGE.

Diabetes insipidus and polyuria 98
complicating adrenal virilism 573
insulin treatment of 307, 471
metabolism of, and the pancreas..... 470
neurological observation on pathogenesis of 470
relation of glycosis in blood to..... 307
socalled renal, and glycosuria of pregnancy 520
studies in 99
Diaphragm, hernia of, right side..... 627
recurring hernia of 626
Diarrhea in infants 625
Diet, dry, in acidosis of children..... 489
during insulin treatment of diabetes mellitus 307
in medicine 88
in obesity 124
incorrect 237
Dietetics, modern, deficiency of halogens in 173, 226
Digitalis in auricular fibrillation..... 535
Digitalization, preoperative 254
Diphtheria, active immunization of adults against 51
antitoxin, hemolytic and agglutinative properties of 51
diagnosis of 565
Disease and its treatment..... 611
Recklinghausen's 574
Diseases, chronic 153
Dislocation, congenital, operative treatment of 306
of patella, complete outward..... 466
of shoulder, recurrent 467
simultaneous, of both shoulder joints... 466
Doctor, time of retiring from practice.... 525
title of 459
Dorsal region, lower, hyperemesis and hematemesis following deep x ray treatment of 546
Douglas, Gilbert Franklin. (See supplement index.)
Drainage of peritoneum 360
Drug addiction 185
Duncan, Harry A. (See supplement index.)
Duodenal tube, examinations with..... 362
in treatment of tapeworm..... 361
ulcer, operations for 344
patient, treatment of..... 527
Duodenum, carcinoma of 96
Dutch neuropsychiatry and its representatives 260, 325
Dutton, W. Forest. Simplified transfusion apparatus 171
Dyes, aniline, in treatment of infections.. 437
Dysenteries, chronic northern 201
Dysentery, bacillary, bacteriological diagnosis of 363
Dysmenorrhea 518
treatment of 519
Dyspepsias, chronic, in women..... 361
Dysthyroidism, familial 572

EAR, pain in 449
middle, prostheses in 205
Eclampsia and justification for active treatment 518
and weather 415
in 1921, Baden statistics on, in light of functional therapy 519
problems in 210
prophylaxis of 544
treatment and prophylaxis of..... 520
Edema, osmotic pressure of blood proteins in pathogenesis of 254
EDITORIAL ARTICLES:
Age and physical labor..... 558
Alcoholic intoxication and carbon dioxide mental disease 239
American heart association 561
Animal and man 84
Animals, diseases of 183
Anthropology of human eye..... 82
Aromatics 32
Asthenia and syphilitic polyglandular disturbances 290
Automobiles, dangers of 342
Barro Colorado Island Research Laboratory 36
Beccari process of garbage disposal.... 132
Blood pressure and methyl guanidine... 237
Brimstone, therapeutic virtues of..... 182
Cancer and gastric ulcer..... 83
of colon, possible causes and treatment 84
problem and health administrator.... 184
Carbon dioxide and alcoholic intoxication 185
Cerebrospinal fluid and hereditary syphilis 291
Children, diseases of 610
school, health of 34
Clinics, venereal disease, and social workers 35
Colon, cancer of, possible causes and treatment 84
Dentifrice, value of 136
Diet, incorrect 236

PAGE.

Disease and its treatment..... 611
Drug addiction 185
Duodenal ulcers, operations for 344
Education and health 505
in business ideals, theory, and practice 346
physical 399
Europe, mongolism in 397
Eye, human, and illumination..... 239
anthropology of 82
Food in house refrigerators..... 562
poisoning 35
French Saranac 292
Garbage disposal by Beccari process... 132
Gastric ulcer and cancer..... 83
operations for 344
Genius 448
Gout, nature and etiology of..... 559
Health administrator and cancer problem and education 505
drive in Bellevue-Yorkville district... 562
of school children 34
of women 343
of workers 504
public, and modern novel..... 289
Heart association, American 561
Homicide statistics 612
Hygiene, industrial 504
mental 134
Hypotension, significance of..... 561
Illumination and human eye..... 239
Immunization, artificial 448
Industrial hygiene 504
Infants, care of 608
Intestines 451
Intoxication, alcoholic, and carbon dioxide 185
Iodine as therapeutic agent..... 399
Italian district of New York, rickets in 452
Journal of radiology, new 506
Labor, physical, and age..... 558
Lancet entertains medical men..... 240
Latin America news 292
laughter 132
Learned, disease of 505
Leprosy, problem of 345
Life, longer 398
Light, value of 396
London, great plague of 502
Man and animal 84
Medical centre in New York..... 506
men entertained by *Lancet*..... 240
poet 288
work in Veterans' Bureau..... 449
Near East Relief 86
Medicine, fifty years of..... 558
future of 502
music as 608
preventive, future of 342
Mental disease, alcoholic 239
hygiene 134
Metabolism, basal, clinical value of..... 182
Methyl guanidine and blood pressure... 237
Migraine 133
Mongolism in Europe 397
Music as medicine 608
Near East Relief medical work..... 86
New York, medical centre in..... 506
public health in 562
rickets in Italian district of..... 452
Novel, modern, and public health..... 289
Nuisance prevention and public health work 33
Parathyroid 184
Patient, exceptional 135
Plague, great, of London..... 502
Poet, medical 288
Poisoning, food 35
Polyglandular disturbances, syphilitic, and asthenia 290
Public health and modern novel..... 289
in New York 562
work and nuisance prevention..... 33
Pudding, peril of 236
Radiology, new journal of..... 506
Refrigerators, house, and food..... 562
Remedies, curious 85
old wives' 288
Research Laboratory, Barro Colorado Island 36
Rickets, cause of 610
in Italian district of New York..... 452
Saranac, French 292
Scarlet fever, new diagnostic signs..... 609
Scharlieb, Dr. 238
Smallpox, Voltaire on 82
Social workers and venereal disease clinics 35
Statistics, homicide 612
Surgeon, remarkable woman 238
Syphilis, hereditary, and cerebrospinal fluid 291
of thyroid gland 290
Syphilitic polyglandular disturbances and asthenia 290
Thyroid gland, syphilis of..... 290
Treacle, therapeutic virtues of..... 182
Tuberculosis sanatorium, French 292
Ulcer, gastric, and cancer 83
Ulcers, gastric and duodenal, operations for 344

PAGE.

Venereal disease clinics and social workers 35
Veterans' Bureau, medical work in.... 449
Vitamines 503
Voltaire on smallpox 82
Weapons, unconcealed 342
Woman, surgeon, remarkable 238
Women, health of 343
Workers, health of 504

Education and health 505
medical 1, 309
physical 399
Egyptian medicine 341
Einhorn, Max. (See supplement index.)
Importance of direct examination of bile in diagnosis of gallbladder lesions..9, 60
Ela, Alfred. Obstetrical images..... 499
Elbow, fractures of..... 466
joint, fractures of 466
Electrocardiogram in prognosis 575
in ventricular systole 575
Empyema treated by combined closed and open method 429
Encephalitis, epidemic, with abdominal spasm 468
lethargica 413, 566
relation of gallbladder infection to..... 14
Endocarditis, rheumatic, of children, heart in 484
Endocrine clinic, diagnostic 197
disturbances as cause of glaucoma and other eye conditions 572
glands and individual constitution..... 573
influence of röntgen rays on..... 585
therapy 572
Endocrinism, splenic, and exocrinism, pancreatic 573
Endocrinology. (See supplement index.)
Endometrium in relation to ovarian function 518
Endothermy in neoplastic diseases..... 470
Epilepsy and malaria 413
Epileptic seizures, factors favoring..... 148
Epinephrin in control of allergic high blood pressure 596
Epstein, J. (See supplement index.)
Erythrocytes in psychiatry, rapidity of sedimentation of 412
rapidity of sedimentation in abortion... 521
sedimentation reaction of, in diagnosis of tuberculosis 49
Esophagus, foreign bodies in 168
primary sarcoma of 414
Española, Siamese twins of 447
Ethylene anesthesia 523
Europe, Mongolism in 397
Eustachian tube, alum oil and vapor in treatment of 26
Eye conditions due to endocrine disturbances 572
human, and illumination 239
anthropology of 82
surgical lesions of, pain with 149
Exanthemata, differential diagnosis of.... 51
Exercise, effect of in diabetes 307
Exocrinism, pancreatic, and endocrinism, splenic 573
Expectancy of life in aortic regurgitation 417
Extremities, diseases of blood vascular system of 252
Extremity, lower, skate in fractures of... 466

FACE, congenital malformations of..... 5
Fallopian tubes, inflation of..... 521
Familial diseases of locomotion..... 257
dysthyroidism 572
Fascia plication for inguinal hernia..... 627
Femur, fracture of 305
Ferguson, Burr. Induced increase in white blood cells, effect on infection..... 580
Ferriar, John, biographical sketch of..... 23
Fetus, intrauterine death of 521
pressure changes in cranioveretral canal of 415
Fever, rat bite 113
rheumatic, myocardial involvement in as shown by electrocardiography 253
Fibrillation, auricular 255
digitalis in 535
Fibroadenoma of stomach 469
Fibrogen in treatment of hematuria..... 534
Fingers, Hippocratic 98
mentioned by Rabelais 127
Fisher, William A. (See supplement index.)
Fistula, bronchial, closed by radium..... 590
Fitzpatrick, Julia and Willius, Fredrick A. Life expectancy with aortic regurgitation 417
Flocculation test for syphilis..... 305
Focal infection and arthritis..... 542
Food in house refrigerators 562
intake and insulin dosage, balance between 372
poisoning 35
Foot and mouth disease, bacillus of..... 244
claw, etiology and treatment of..... 306
deformities 306

PAGE.

Foramen of Winslow, hernia through 626
Forceps, Kielland 415
Foreign bodies in esophagus..... 168
in tongue 375
Formaldehyde, production of by intestinal bacteria 360
Fractures, compression leverage, of ankle joint 50
epiphyseal line, prognosis of..... 51
healing of 467
in lower extremity, skate in..... 466
of ankle joint 50
of elbow 466
of femur 305
of humerus, new splint for..... 466
of os calcis 306
treatment of 50
ununited, treatment of 305
France, typhoid in 350
French vital statistics 566
Friedenwald, Julius. (See supplement index.)
Friedman, Joseph. (See supplement index.)
Friedman, Joseph, and Greenfield, Samuel D. Foreign bodies in the esophagus with report of six cases..... 168
Significance of enlarged glands in the neck 382
Friend, Herman. (See supplement index.)
Frosch, H. L. Vaccine therapy: report of three cases 494
Fusion operation, on spine, modified..... 306
scoliosis 306

GAGER, Leslie T. Balance between food intake and insulin dosage..... 372
Galen, views of, on kidney..... 390
Galen's commentaries on kidney disease... 603
Gallbladder, carcinoma of 414
infection in relation to encephalitis.... 14
lesions, bile in diagnosis of.....9, 60
Gangrene, sodium citrate in treatment of 535
Garai, Frank, and Monaghan, W. J. Treatment of acute and chronic polyarthritis, arthritis deformans, and septicemias, with activated colloidal sulphur 24, 75
Garbage disposal by Beccari process..... 132
Gastrectomy 142
Gastric cancer, end results in operations on juice, determination of free acid in.... 363
patient, treatment of..... 362
ulcer and cancer 527
chronic, significance of oidium in.... 83
complicated by pertussis..... 360
operations for 381
treatment of 344
Gastrointestinal diseases. (See supplement index.) 362
Generation, spontaneous, decline of doctrine of 341
Genital atrophy, clinical and röntgenological study of 197
Genitourinary tract and pain 150
Genius 448
Geriatrics. (See supplement index.)
Germanium dioxide in treatment of anemias of childhood 468
Gettinger, J. H. Intracutaneous vaccination against smallpox 115
Gibbon, Robert L. (See supplement index.)
Gillett, A. Scott. (See supplement index.)
Gillette, Norris W. (See supplement index.)
Gland, pineal, and its function..... 476
pituitary, surgery of 305
Glandbearing regions of body, filtered x ray to, in treatment of lupus erythematosus 530
Glands, enlarged, in neck..... 382
Glaucoma due to endocrine disturbances.. 572
Glycosis in blood in relation to diabetes.. 307
Glycosuria, new method of treating..... 471
of pregnancy and socalled renal diabetes 520
phloridzin, in pregnancy, diagnostic applicability of 521
Goeckerman, William H. Treatment of lupus erythematosus by filtered x ray to the glandbearing regions of the body 530
Goitre 142
action of iodine on..... 198
and mental diseases..... 198
exophthalmic, Lugol's solution in..... 471
x ray therapy in..... 471
myxedematous, extract of in treatment of Basedow's disease 197
problem 199
certain aspects of 196
question, simplified treatment of..... 471
risk and local anesthesia 198
secondary operations for 197
Goldheaded cane, symbolism of..... 131
Goldstein, Hyman I. Primary malignant tumors of the liver 119
Goldstein, Leopold. (See supplement index.)
Golob, M. Advantages of the stylet used with the Rehfuss tube 436

PAGE.

Golob, M. Nonsurgical biliary drainage.. 69
Gonorrhea 350
Gonorrheal arthritis, with purulent fluid in synovial space 428
Gordon, Alfred. (See supplement index.) Consideration of familial diseases, of locomotion 257
Gordon, Mark. Infection with staphylococcus albus 488
Gout, nature and etiology of 559
Grafts, testicular 572
effects of, on senile organisms..... 572
Graham, James, biographical sketch of.... 180
Grant, Francis G. (See supplement index.)
Greenbaum, Sigmund S. (See supplement index.)
Greenberg, David. Clinical studies in venous thrombosis 276
Greenfield, Samuel D., and Friedman, Joseph. Foreign bodies in the esophagus with report of six cases..... 168
Significance of enlarged glands in the neck 382
Growth, body, stimulation of, by organotherapy 626
Gumma of breast 96
of thyroid 196
Gynecology. (See supplement index.)
local anesthesia in minor operations of.. 518
pain in 150
radium therapy in 101, 156
regional anesthesia in 522
ultraviolet ray treatment in..... 519

HALL, Granville Stanley, 1846-1924.... 23
Hallilay, W. H. (See supplement index.)
Halogens, deficiency of, in modern dietetics 173, 226
Halpert, Henry. What the general practitioner should and must know about hypertension 273
Hankins, F. H. Granville Stanley Hall, 1846-1924 22
Harelip, associated with ala deformity, operation for 72
Harkavy, Joseph. Phlebitis and thrombophlebitis migrans 64
Harris, William L. Closure of bronchial fistula by radium..... 590
Hay fever, home treatment of..... 4
relation of, to bronchial asthma..... 49
Health administrator and cancer problem.. 184
and education 505
in Bellevue-Yorkville district 562
of school children 34
of women 343
of workers 504
public, and modern novel..... 289
Heart action in sleep and dreams, ite relato hemorrhages, angina, and sudden death 253
association 561
in hypertension 253
in hyperthyroidism 252
in rheumatic endocarditis in children... 484
Hematemesis following deep x ray treatment of lower dorsal region 546
Hematuria, fibrogen in treatment of..... 534
Hemiplegics, reeducation of muscles in treatment of..... 266
Hemolytic disorders in relation to pernicious anemia 467
streptococci in pregnancy 521
Hemophilia, control of 13
Hemorrhage, blood pressure and heart action in sleep and dreams in relation to 253
cerebral, and high blood pressure..... 566
control of 13
uterine, fluid extract of condurango in treatment of 283
Henry, O., medical wisdom of..... 177
Heredity and diseases of childhood..... 624
Hernia, congenital cerebral, treatment of.. 151
femoral, surgical anatomy of..... 626
inguinal, choice of operation in..... 57
fascia plication for 627
operations for, especially in infancy.. 627
postoperative recurrence of..... 627
repairing with living sutures 627
sacs, inflammation in 626
recurring, of diaphragm..... 626
right diaphragmatic..... 627
through foramen of Winslow..... 626
Herodotus as medical writer 501
Hertzberg, G. R. R., and Hertzberg, Reinhold. Congenital malformations of the face 5
Heterotopia of central nervous system in relation to malformation of body segments and nervous diseases.....327, 385
Heyd, Charles Gordon. (See supplement index.)
Hippocrates, views on kidney.....28, 78
Hippocratic fingers 98
nephritis 230
Homicide statistics 612
Hospital, Allgemeine Krankenhaus..... 551

PAGE.

Hospital, Bellevue, surgery in, fifty years ago 551
Salpêtrière 138
Hubbard, L. D. (See supplement index.)
Hubert, Louis. (See supplement index.)
Humerus, new splint for fracture of..... 466
Hunter, John, biographical sketch of..... 129
Hutton, James H. Pineal gland and its function 476
Hydatid brain cyst 73
Hydrohepatosis 363
Hydrophobia and carriers 591
Hydrops in pregnancy, treatment of.... 521
Hygiene, industrial 504
mental 134
Hymanson, A. (See supplement index.)
Hypercholesterolemia 360
Hyperemesis following deep x ray treatment of lower dorsal region 546
Hyperesthesia, cutaneous, in acute abdominal disease 360
Hyperpiesis and arteriosclerosis..... 253
Hyperplasia of breast tissues..... 469
Hypertension 273
heart in 253
Hyperthyroidism and heteroactivity of pituitary gland 572
heart in 252
iodine in treatment of..... 599
Hypertrophic stenosis of pylorus..... 361
Hypophysis cerebri, human, quantitative study of 572
Hypotension, significance of 561
Hysterectomy, chemical 519

ILLUMINATION and human eye..... 239
Immunity and myxedema..... 572
reaction in scarlet fever..... 51
Immunization, artificial 448
of adults against diphtheria 51
Impetigo contagiosa in children 626
Impulse, wanderlust 19
Industrial hygiene 504
Infancy, early, wasting disorders of..... 624
Infant welfare movement 625
Infantile paralysis, treatment of..... 151
Infantilism treated with insulin..... 470
Infants, asphyxia of, during delivery..... 521
care of 608
congenital defects of skin and scalp.... 626
diarrhea in 625
hypertrophic pyloric stenosis of..... 17
operation for inguinal hernia of..... 627
pyelitis in 624
sick, instability of plasma in 625
significance of protein fractions in blood plasma 626
Infection, effects on, of induced increase in white blood cells 580
gallbladder, in relation to encephalitis.. 14
meningococcal 42
renal 323
upper abdominal postoperative 473
with staphylococcus albus 488
Infections, aniline dyes in treatment of... 437
Inflammation in sacs of inguinal hernia.. 626
of breast 314
Influenza 40
Insane, blood sugar in cerebrospinal fluid of 412
Kottman reaction in..... 469
malaria therapy in general paralysis of.. 412
Insanity and crime 244
Insulin, clinical use of 200
dosage, adjustment of 481
and food intake, balance between..... 372
effect of on sugar content of blood in diabetes 200
in infantilism 470
in relation to Wassermann reaction.... 307
in treatment of diabetes.....307, 470
use of..... 99
Intestinal rotation, anomalies of 363
Intestine, small, volvulus of, in children.. 626
Intestines 451
bacteria of, in production of formaldehyde 360
carcinoma of, relation to lymph glands.. 96
chemical blood changes after obstruction of 360
chronic stasis of 362
perchlorides of mercury and iron as antiseptics for 363
Intoxication, alcoholic, and carbon dioxide 185
Intracranial pain 149
surgery, anesthesia in 522
tension, increased, use of hypertonic saline solutions in 151
Intrauterine death of fetus carried past term 521
Intravenous anesthesia 523
Iodides, passage of, into cerebrospinal fluid 469
Iodine, action of, in goitre..... 198
as therapeutic agent 399
in treatment of hyperthyroidism..... 599
Iron, sesquichloride of, as intestinal antiseptic 363
Ischuria, paradoxic, in puerperium..... 518
Italian district of New York, rickets in... 452
emigration service 459
Ivy poisoning 99

PAGE.

JABLONS, Benjamin. Thromboangiitis obliterans 270
Jack, George N. Prophylactic gas filtering ventilator for summer autumnal coryza and asthma 164
Jelliffe, Smith Ely. Dutch neuropsychiatry and its representatives 260, 324
Jenner, Edward, biographical sketch of... 80
Jennings, Alpheus Felch, and Jennings, Charles Godwin. Surgical treatment of angina pectoris 311
Jennings, Charles Godwin, and Jennings, Alphus Felch. Surgical treatment of angina pectoris 311
Joints. (See supplement index.)
ankylosed, mobilization of..... 306
pain in 149
Jones, Clement R. Treatment of the patient with gastric or duodenal ulcer.. 527
Journal of radiology, new..... 506

KAHN and Wassermann reactions..... 304
Kahn, I. S. Allergic high blood pressure controlled by epinephrin..... 596
Kay, H. M. Clinical experiences with desiccated spleen and red bone marrow in the treatment of anemia 281
Keats, John, biographical sketch of..... 284
Keller, Henry. (See supplement index.)
Kennedy, William H. (See supplement index.)
Kidney disease, Galen's commentaries on function in osteitis deformans..... 603
physiology and anatomy according to Hippocrates and Aristotle 28, 62
surgery, paravertebral anesthesia in.... 78
use of according to Galen..... 523
Kilduffe, Robert A. (See supplement index.) 390
Kirby, Frank B. Atomizer in nose and throat work 541
Klapper, Harry. (See supplement index.)
Klaus, Henry. Primary sarcoma of the stomach 161
Knopf, S. Adolphus. Outdoor sleeping in winter for the sick and the well.... 478
Kottman reaction in the insane..... 469
Kouindjy, P. Principles of reeducation of the muscles in the treatment of hemiplegics 266
Krobalski, Joseph, and Pinkerton, William A. Two cases of botulism..... 117
Kross, Isidor. Tetanus as a postoperative complication 172

LABOR, cardiopaths in 518
induction by hydrostatic bag..... 415
physical, and age..... 558
Laboratory processes of interest to urologist 217
Lactic acid, excretion of, in carcinosis.... 470
Laennec, René Théophile Hyacinthe, biographical sketch of 286
Laparoscopy 361
Laryngeal nerve, transient postpartum paralysis of 468
Laryngology, some anomalies in 223
Larynx, treatment of, by alum oil and vapor 26
Lavendera, Miguel. Case of gonorrheal arthritis with purulent fluid in the synovial space 428
Laverty, Edward Calvin. Value of bacterins in practice 74
Lead, influence of, on cell growth..... 96
LeFever, H. E. Determinations necessary to adjust insulin doses 481
Leprosy, problem of 345
Leptomeninges, primary sarcomatosis of ..470
Leriche's operation 602
Lesions, varicella, atypical distribution of dependent upon coexistent syphilis.... 305

LETTERS TO THE EDITOR:
American Association of Obstetricians, Gynecologists, and Abdominal Surgeons. Maternal Welfare..... 308
Aulde, John. Ivy poisoning—A remedy 99
Goodman, Herman. The title of doctor.. 459
Hall, T. Proctor. Alcohol and carbolic acid 459
Morris, Robert T. Theft of surgical instrument 186
Rothmann, Emil D. Blood sedimentation 458
Savini, Carlo. Italian emigration service 458
Tweddell, F. Alcoholic poisoning..... 353
Wolbarst, Abr. L. A diagnostic point.. 99
Leucemia, effect of x rays on..... 229
treated by thorium emanation 602
Leucopenia with arthritis in adult..... 575
Leucorrhea, chronic 518
Levin, Oscar L., and Schwartz, Hans J. Bismuth in the treatment of syphilis.. 547
Life expectancy with aortic regurgitation.. 417
longer 398
Light therapy 389
value of 396, 567
Linimentum calcis chlorinatæ in treatment of burns 389

PAGE.

Lister, Lord, biographical sketch of..... 444
ward, preservation of..... 181
Liver, primary malignant tumors of..... 119
Livingston, W. H., and Boas, Ernst P. Chronic diseases 153
Llewellyn, Llewellyn Jones. History of bathing 77
Locomotion, familial diseases of 257
London, great plague of..... 502
Lues, treatment for, in cases of diabetes refractory to insulin 307
Lugol's solution in exophthalmic goitre... 471
Lumbago 412
Lungs, primary cancer of 414
Lupus erythematosus, filtered x ray to gland bearing regions of body in treatment of 530
Lymph glands in carcinoma of small intestine 96

McCASKEY, Donald. Effect of ultraviolet light on blood chemistry..... 589
McCready, E. Bosworth. (See supplement index.)
Macy, Frederick S. Suggested means of administering chlorine gas without special apparatus 225
Magnesium sulphate in treatment of carbuncle 389
Malaria and articular rheumatism..... 575
and epilepsy 413
masked, following malaria treatment of general paralysis 413
self-defensive reaction in treatment of.. 389
therapy in general paralysis of insane.. 412
treatment of general paralysis followed by masked malaria 413
Malformation of body segments in relation to heterotopia of central nervous system 327, 385
Malformations, congenital, of face..... 5
Malignant disease of testis..... 470
Malonylurea, contraindication to use of derivatives of 413
Man and animal 84
Marat, Jean Paul, biographical sketch of.. 180
Marbury, W. B. Acute empyema treated by the combined closed and open method 429
Mastitis, chronic 469
Maxillary sinus, treatment of diseases of from viewpoint of dentist 582
Maxwell, C. W. Fluid extract of condurango 283
May, Arnold H. (See supplement index.)
Mazoplasia 469
Measles, serum prophylaxis of..... 51
Mediastinum, primary cancer of..... 414
Medical centre in New York..... 506
wisdom of O. Henry 177
work in Veterans' Bureau..... 449
Near East Relief 86
writer, Herodotus as 501
Medicine and quackery, conflict of..... 395
Egyptian 341
fifty years of 558
future of 502
music as 608
preventive, future of 342
social significance of 53
Medicoliterary notes
46, 95, 147, 195, 251, 302, 358, 410, 464
516, 571, 622.
Medicolegal notes
52, 100, 152, 200, 256, 308, 364, 416,
472, 524, 576, 628.
Meningococcus, infection with..... 42
Menopause, fluid extract of condurango during 283
Menorrhagia, fluid extract of condurango in treatment of 283
Menstruation and ovaries 520
Mental diseases, alcoholic 239
and goitre 198
hygiene 134
states in alcoholism 414
Mercuric chloride poisoning, acute 427
Mercury, perchloride of, as intestinal antiseptic 363
poisoning, antidote for 482
Metabolism, basal, clinical value of..... 182
bile in 362
diabetic, and the pancreas 470
sugar, and blood pressure 574
Methyl guanidine and blood pressure.... 237
effect of on blood pressure..... 255
Metrorrhagia, fluid extract of condurango in treatment of..... 283
Meyer, William H. (See supplement index.)
Migraine, results of surgery for 151
Mitochondria content of thyroid as index to activity of gland 573
Moehlig, Robert C. (See supplement index.)
Monaghan, W. J., and Garai, Frank. Treatment of acute and chronic polyarthritis, arthritis deformans, and septicemias, with activated colloidal sulphur 24, 75

PAGE.

Moncalvi, Lodovico. (See supplement index.)
Mongolism in Europe 397
Montague, J. F. Rectal surgery abroad.. 490
Montgomery, Douglass W. (See supplement index.)
Mention made of the fingers by Rabelais 127
Morgan, James Albert. Case of rat bite fever in Hawaii 113
Morris, Robert T. When should a doctor retire from practice? 525
Mumps, treatment of 42
Muscles, reeducation of in treatment of hemiplegics 266
Music as medicine 608
Myocardial involvement in rheumatic fever, electrocardiographic evidence of.. 253
Myxedema and immunity 572
postoperative 573

NASAL surgery, local anesthesia in..220, 279
Nasodilatation in aortic regurgitation and capillary pulsation..... 574
Nasopharynx, treatment of by alum oil and vapor 26
Near East Relief medical work..... 86
Neck, enlarged glands in 382
Neoplasms, semiology of..... 403
Neoplastic diseases, endothermy in..... 470
Neosalvarsan in treatment of anthrax... 335
Nephritis, anemia in, with nitrogen retention 467
Hippocratic 230
Nerb, Louis. Laboratory procedures of interest to the urologist 216
Nerve lesions, ulnar and median, weakness in 148
operations, remote results of 50
splanchnic, anesthesia of 151
ulnar palsy of 151
Nerves, vagus and cervical sympathetic, communication between 469
Nervous system, central, heterotopia of 327, 385
in experimental botulinus poisoning 468
Neuhof, S. (See supplement index.)
Neurofibromatosis, Recklinghausen's 468
Neurological viewpoint of diabetes mellitus of radicular pain in spondylitis deformans 470
Neurology. (See supplement index.) 215
Neuroses, cardiac, diagnosis and treatment of 255
Neurosis, compensation 151
Neuropsychiatry. (See supplement index.)
Dutch, and its representatives.....260, 325
New, Gordon B. (See supplement index.)
New York medical centre in..... 506
public health in 562
rickets in Italian district of 452
Nitrogen retention with anemia in nephritis 467
Nitrous oxide oxygen, pure, anesthesia by. 523
Nose, atomizer in treatment of 541
Nuisance prevention and public health work 33

OBERNDORF, C. P. (See supplement index.)
Obesity, dietetic treatment of 124
hypophyseal and cerebral, clinical and röntgenological studies of..... 197

OBITUARY:
Aikins, William Henry B..... 452
Bayliss, Sir William 400
Broome, Joseph R..... 186
Getman, Adelbert A. 186
Moeller, Henry 186
Neuhof, Selian 452
Roberts, John Bingham 612
Robinson, Andrew Rose 240
Robinson, Beverley 86
Obstetrical images 499
Obstetrics. (See supplement index.)
Ogilvy, Charles. (See supplement index.)
Oidium, significance of in chronic gastric ulcer 360
Oliensis, A. E. Rationale of acute mercuric chloride poisoning 427
Operation, Alexander-Adams, results with 520
Leriche's 602
Operations, one of first..... 31
Operative risks, bad, anesthesia in..... 522
Oral surgery, local anesthesia in.....220, 279
Organotherapy in stimulation of body growth 626
Os calcis, fractures of..... 306
Osborne, Oliver T. (See supplement index.)
Osmotic pressure of blood proteins in pathogenesis of edema and of high blood pressure, rôle of 254
Osteitis deformans, kidney function in... 62
Osteomalacia and rickets..... 625
Otitis media, mortality from..... 566
suppurative, zinc ionization in treatment of 126
Outdoor sleeping in winter..... 478
Ovaries and menstruation 520
Owensby, Newdigate M. Pellagra..... 377

PAGE.

PAIN and genitourinary tract..... 150
from abdominal spasm with epidemic encephalitis 468
in chest 469
in ear 149
in gynecology 150
in joints 149
in upper abdomen 469
intracranial 149
intractable, relative to rhizotomy and spinal section 468
radicular, in relation to spondylitis deformans, from neurological viewpoint 215
surgical significance of 149
with surgical lesions of eye..... 149
Palpation and auscultatory percussion.... 367
Palsy, late ulnar nerve..... 151
Pancreas and diabetic metabolism..... 470
exocrinism of with splenic endocrinism 573
Papillomatosis, bilharzial, of rectum..... 361
Paralysis, general, masked malaria following malaria treatment of..... 413
of insane, malaria therapy in..... 412
treatment of 412
infantile, treatment of 151
specific and nonspecific treatment of... 151
transient postpartum, of recurrent laryngeal nerve 468
Parathyroid 184
and rickets 625
Paravertebral anesthesia in kidney surgery 523
Parker, Arthur J. Inflammatory diseases of the breast 314
Parsons-Smith, B. T. (See supplement index.)
Patella, complete outward dislocation of 466
separation of quadriceps from..... 306
Patient, exceptional 135
Patin, Dr. Guy, multiple personality of... 394
Pediatrics. (See supplement index.)
Pellagra 377
Pelouze, P. S. What the cystoscopy of today means to physician and patient.. 316
Percussion, auscultatory, and palpation... 367
Periarterial sympathectomy 42
Perineum, primary repair of during puerperium 521
Peritoneum, drainage of 360
Personality, multiple, of Dr. Guy Patin... 394
Pertussis complicating gastric ulcer..... 381
Peutot, Joseph. (See supplement index.)
Pharmacopœia, Taoist 498
Philips, Herman B. (See supplement index.)
Phlebitis and thrombophlebitis migrans... 64
Phlegmon of carotid 403
Phloridzin glycosuria in pregnancy, diagnostic applicability of 521
Phosphorus therapy 602
Physician acts as librarian..... 501
pope as 557
Physiotherapy, synopsis of 483
Physostigmine and pituitrin, action of... 199
Pinkerton, William A., and Krobalski, Joseph. Two cases of botulism..... 117
Pitfield, Robert L. Unusually high blood sugar content in a case of diabetes... 433
Pituitary body, human, quantitative study of 572
gland, heteroactivity of, with hyperthyroidism 572
surgery of 305
tumor 199
Pituitrin and physostigmine, action of.... 199
Placenta, adrenalin in manual delivery of 197
Plague, bubonic, treatment of..... 26
great, of London 502
Plasma, blood, in infancy, significance of protein fractions in 626
instability of, in sick infants..... 625
Platelet count in pernicious anemia, by Thomsen's method 468
Plication, fascia, for inguinal hernia..... 627
Pneumonia, early diagnosis of..... 49
treatment of 536
Pneumothorax, artificial, permanent results of 49
Pneumoventricle of the cerebrum..... 150
Poisoning, acute mercuric chloride, rationale of 427
alcoholic 353
botulinus, central nervous system in... 468
food 35
Poliomyelitis, acute anterior, early mechanical treatment of 150
Polyarthritis, treatment of with activated colloidal sulphur 24, 75
Polycythemia vera, clinical study of..... 319
Polyglandular disturbances, syphilitic, and asthenia 290
Polyuria and diabetes insipidus 98
Postmortem examination, first known in new world 447
Postoperative infection of upper abdomen 473
Postpartum paralysis, transient, of recurrent laryngeal nerve 468
Pregnancy and cancer, especially cancer of breast 414
and diabetes 455

PAGE.

Pregnancy, cardiopaths in 518
diagnostic applicability of phloridzin glycosuria in 521
glycosuria of, and socalled renal diabetes 520
late toxemias of, aftereffects..... 520
starvation toxicosis of 519
treatment of hydrops in 521
Proctology, abroad 490
Prophylaxis by external version; breech presentations 415
in coryza and asthma..... 164
serum, of measles 51
Protein fractions in blood plasma in infancy, significance of 626
reaction, nonspecific 387, 440, 495
Pruritus vulvæ, treatment of..... 229
Psychiatry, rapidity of sedimentation of erythrocytes in 412
relation of individual psychology to.... 412
Psychoanalysis, evolution of 235
Psychology, individual, in relation to psychiatry 412
Psychotherapy, growth of 235
Public health and modern novel..... 289
in New York 562
work and nuisance prevention..... 33
Puerperal sepsis, serum treatment of..... 496
Puerperium, paradoxic ischuria in..... 518
primary repair of perineum during.... 521
Pulsation, capillary, and nasodilatation in aortic regurgitation 574
Pyelitis and bacterial count of urine in children 624
in infancy and childhood, diagnosis and treatment 624
Pylorus, congenital stenosis of and Rammstedt-Weber operation 361
hypertrophic stenosis of 361

QUACKERY, conflict of with medicine 395
Quadriceps, separation of from patella 306
Quinine urea injection for sciatica..... 413

RABELAIS, fingers mentioned by..... 127
Rabies 142
Radiology, new journal of..... 506
Radium, closure of bronchial fistula by... 590
therapy in gynecology.....101, 156
of thyroid 198
Rahmet, H., Bey. Hydrophobia and carriers 591
Rammstedt-Weber operation for congenital pyloric stenosis 361
Rank, Otto. (See supplement index.)
Rat bite fever 113
Ray, Henry M. (See supplement index.)
Anaphylaxis: development and modern conception in its relation to clinical medicine 110
Reaction, colloidal benzoin in syphilis.... 304
immunity, in scarlet fever..... 51
Kottman, in the insane 469
nonspecific protein 387, 440, 495
sedimentation of erythrocytes, in diagnosis of tuberculosis 49
selfdefensive, in treatment of malaria.. 389
Wassermann, in relation to insulin.... 307
Reactions, emotional, in childhood..... 148
Recklinghausen's disease 574
neurofibromatosis 468
Rectum, administrating of salicylates by.. 283
bilharzial papillomatosis of 361
carcinoma of 414
surgery of, abroad..... 490
Reder, Francis. Tuberculous disease of the spleen 107
Reed, Ralph. (See supplement index.)
Refrigerators, house, and food..... 562
Regan, Joseph C. Report of cases of pertussis complicating a gastric ulcer... 381
Regurgitation, aortic, nasodilatation in, and capillary pulsation 574
Rehfuss tube, advantages of stylet with.. 436
Relaxation of muscle, artificial, in dilation of cervical canal..... 521
Remedies, curious 85
old wives' 288
Renal artery, aneurysm of 254
diabetes, socalled, and glycosuria of pregnancy 520
diseases 350
infection 322
tissue, relation of amount of to blood pressure 575
Research Laboratory, Barro Colorado Island 36, 38
Respiratory diseases. (See supplement index.)
Retractor, new, for amputation of extremities 171
Retroversion, afterresults of abdominal operation for 518
Rheumatic endocarditis of children..... 484
fever, myocardial involvement in..... 253
nature and etiology of..... 575
pathogenesis of 575
Rheumatism, articular, and malaria..... 575
Rhizotomy, pain in relation to..... 468
Rickets and acidosis..... 625

PAGE.

Rickets and osteomalacia 625
and parathyroids 625
cause of 610
in Italian district of New York..... 452
Röntgen rays, influence of, on endocrine glands 585
Rose, Robert Hugh. (See supplement index.)
Rosenbaum, Charles. (See supplement index.)
Rosenheck, Charles. Radicular pain and its relation to spondylitis deformans from a neurological viewpoint..... 215
Rotation, intestinal, anomalies of..... 363
Rucker, William Colby. Barro Colorado Island Research Laboratory 38
Chervin, a pioneer epidemiologist..... 232
Rush, Benjamin, biographical sketch of... 393

SACRAL anesthesia 523
Sacralization, painful 403
Sacrum, ventral tumors of 98
Salicylates, use of per rectum..... 283
Saline solutions, hypertonic, use of in increased intracranial tension 151
Salpétrière Hospital 138
Salzman, S. R. Relation of gallbladder infection to encephalitis..... 14
Sarcoma, cysticercus, susceptibility to.... 470
giant cell, prognosis in..... 97
primary, of esophagus 414
of mediastinum and lungs..... 414
of stomach 161
Sarcomatosis, primary, of leptomeninges.. 470
Scadron, Samuel J. Prophylaxis of eclampsia 544
Scalp, congenital defects of, in newborn.. 626
Scarlet fever, immunity reaction in..... 51
new diagnostic signs 609
Scharlieb, Mary, biographical sketch..... 238
Scheppegrell, William. Comfort for hay fever subjects at home..... 4
Schistosomiasis, antimony tartrate in treatment of 229
Schmidt, William H. Foreign bodies in the tongue 375
Schoenheit, Edward W. (See supplement index.)
Scholz, Thomas. (See supplement index.)
Schulmann, Ernest. (See supplement index.)
Schwartz, Hans J., and Levin, Oscar L. Bismuth in treatment of syphilis..547, 600
Sciatica, quinine urea injection for..... 413
Scoliosis, fusion operation for 306
Scully, Francis J. Kidney function in osteitis deformans 62
Secretion, changes in bile caused by pressure obstacle to 363
Secretions, internal, importance of in cataract 573
Sedimentation of erythrocytes, rapidity of, in abortion 521
in psychiatry 412
Senility, effects of testicular grafts upon. 572
Sepsis, puerperal, serum treatment of.... 496
Septicemia, treatment of, with activated colloidal sulphur 24
Serum accidents 41
antituberculosis 245
blood, in thyroidectomy 196
prophylaxis in measles 51
treatment of puerperal sepsis 496
Sex proportion 89
Sheehan, J. Eastman. (See supplement index.)
Recommended procedure for relief of ala deformity in certain cases in the adult associated with harelip and its mechanical counterpart 72
Sheffield, Herman B. Dry diet as a diagnostic test as well as therapeutic measure in acidosis of children 489
Sherwood, Dunn B. Salpétrière Hospital.. 138
Shoulder joints, simultaneous dislocation of both 466
recurrent dislocation of 467
Shuman, John W. Hydatid brain cyst.... 73
Sickle cell anemia 467
Silver, Henry Mann. Surgery in Bellevue Hospital fifty years ago 551
Sinus, maxillary, treatment of diseases of from viewpoint of dentist 582
Sinusitis, painless maxillary, simulating tuberculosis 49
Skin, congenital defects of in newborn.... 626
hyperesthesia of, in acute abdominal disease 360
Slater, S. A. (See supplement index.)
Slesinger, E. G. (See supplement index.)
Smallpox in Switzerland 616
intracutaneous vaccination against..... 115
Voltaire on 82
Smiley, Irving. (See supplement index.)
Problems in eclampsia 210
Smith, Harmon. Common cold 577
Smith, James H. Chronic anemias and related conditions 421
Social workers and venereal disease clinics 35

PAGE.

Sodium citrate in treatment of thrombo-arteritis obliterans and gangrene.... 335
nitrate, blood pressure response to.... 255
Soresi, A. L. Control of hemophilia and other hemorrhagic conditions 13
Spangler, Ralph H. Therapy of the non-specific protein reaction 387, 440, 495
Spasm, abdominal, with epidemic encephalitis 468
Spinal anesthesia 523
cord, degeneration of in pernicious anemia 468
fluid, diagnostic value of sugar concentration in 469
section, pain in relation to 468
Spine, internal splinting of 305
modified fusion operation on..... 306
Spleen, desiccated, in treatment of anemia 281
endocrinism of with pancreatic exocrinism 573
tuberculosis of 107
Splenomegaly with arthritis in adult..... 575
Splint, new, for fracture of humerus.... 466
Spondylitis deformans, radicular pain in, from neurological viewpoint 215
Sprue and pernicious anemia 467
Stammering, etiology of 469
Staphylococcus albus, infection with..... 488
Starvation toxicosis of pregnancy..... 519
Stasis, chronic intestinal 362
Statistics, homicide 612
Stauffer, Nathan P. Focal infection and arthritis 542
Steinach's rejuvenation operation 572
Stenosis, congenital pyloric and Rammstedt-Weber operation 361
hypertrophic pyloric 17, 361
Sterility, treatment of 519
Stern, Adolph. (See supplement index.)
Stetten, deWitt. (See supplement index.)
Stivelman, Barnet P. (See supplement index.)
Stomach, fibroadenoma of 469
primary sarcoma of 161
Streptococci, hemolytic, in pregnancy.... 521
Stylet, advantages of with Rehfuss tube.. 436
Sugar and blood sugar in cerebrospinal fluid of insane 412
concentration in spinal fluid, diagnostic value of 469
metabolism and blood pressure 574
Sulphur, parenteral, similarity of action of therapy and proteotherapy of..... 76
Sunlight, deficiency of, injurious to children 624
Surgeon, remarkable woman 238
Surgery in Bellevue Hospital fifty years ago 551
of rectum 490
Sutures, living, in repair of inguinal hernia 627
Swetlow, George. (See supplement index.)
Synovial space, purulent fluid in..... 428
Syphilis. (See supplement index.)
abortive treatment of 304
arsenical preparations in 126
bismuth in treatment of 547, 600
coexistent with varicella lesions..... 305
flocculation test for 305
hereditary, and cerebrospinal fluid..... 291
in angina pectoris 574
in rabbit, cured with arsphenamine.... 304
of thyroid gland 290
uterine 304
Syphilitic aortitis 574
polyglandular disturbances 290
Systole, ventricular, electrocardiogram in. 575

TANTRUMS in childhood 148
Tapeworm, use of duodenal tube in treatment of 361
Tasker, Arthur N. Decholesterinization.. 595
Taylor, J. Madison. Treatment of certain conditions common to most chronic diseases 333
Teratology and teratoid tumors 365
Testicular grafts 572
effects of on senile organisms 572
Testis, behavior of in transplantation..... 572
internal secretions of 198
malignant disease of 470
Tetanus as postoperative complication... 172
Thewlis, Malford W. (See supplement index.)

PAGE.

Thomsen's method of platelet counting in pernicious anemia 468
Thorium emanation in leucemias 602
Throat, atomizer in treatment of 541
surgery, local anesthesia in 220, 279
Thromboangiitis obliterans 270
Thromboarteritis obliterans, sodium citrate in treatment of 535
Thrombophlebitis migrans and phlebitis... 64
Thymectomy 565
Thymus in relation to venous trunks at base of brain..... 574
Thyroid disease 199
diseases, differential diagnosis of..... 196
encapsulated adenomata of 197
gumma of 196
malignant tumors of 98
mitochondria content of, as index to activity of gland 573
radium therapy of 198
surgery of 198
syphilis of 290
Thyroidectomy, effect of upon calcium content of blood serum 196
Tinnitus aurium associated with abnormalities of blood pressure 574
Tissue, renal, relation of amount of to blood pressure 575
Titration of indicator in determination of free acid in gastric juice 362
Tompkins, H. E. Local anesthesia for dental, oral, nose and throat surgeons.220, 279
Tongue, foreign bodies in..... 375
Tonsillitis, is it merely a symptom?..... 209
Toxemias of pregnancy, late, aftereffects of 520
Toxicosis, starvation, of pregnancy..... 519
Tracy, Edward A. (See supplement index.)
Transfusion apparatus, simplified 171
Treacle, therapeutic virtues of..... 182
Tuberculosis 295, 296
bone and joint 49
complement fixation in 48
of spleen 107
pathology and treatment of..... 48
pulmonary, sedimentation reaction of erythrocytes in diagnosis of 49
simulation of, by maxillary sinusitis.. 49
surgical treatment of 49
symptoms of 49
sanatorium, French 292
scientific treatment of 48
serum in prophylaxis of 245
treatment of 49
Tumors, giant cell, of bone..... 469
malignant, in rabbit, studies on 98
of thyroid 98
multiplicity, growth, and formation of.. 97
pituitary 199
primary malignant, of liver 199
teratoid, and teratology 365
ventral, of sacrum 98
Turkus, E. Newton. New retractor for amputations of the extremities 171
Twins, Siamese, of Espanola..... 447
Typhoid in France 350
vaccination against, by mouth..... 496
Typhus fever, etiology of 51

ULCER, chronic gastric, significance of oidium in 360
duodenal, operation for 344
treatment of patient 527
gastric, and cancer 83
complicated by pertussis 381
operations for 344
principles of. treatment of..... 362
treatment of patient in..... 527
Ulcers, results of operations on 361
Ultraviolet light, effect of on blood chemistry 589
ray treatment in gynecology 519
Urinary retention, postoperative, intravenous injections of urotropin solution in 229
Urine, bacterial account of, in children, and pyelitis 624
Urologist, laboratory processes of interest to 217
Urology, study of in Vienna..... 294
Urotropin solution, intravenous injections of in postoperative urinary retention and systitis 229
Uterus, bacterial invasion of 519
didelphys 521

PAGE.

Uterus, hemorrhage of, treated by fluid extract of condurango 283
prolapse of, ... 520
syphilis of 304

VACCINATION 41
antityphoid, by mouth..... 496
intracutaneous, against smallpox..... 115
Vaccine therapy 494
Vagus and cervical sympathetic nerves, communication between 469
Varicella lesions, atypical distribution of dependent upon coexistent syphilis.. 305
studies on 51
Vaughan, Ernest M. Carbon monoxide and dioxide 379
Vegetative functions 150
Venereal disease 191
clinics and social workers 35
Ventricular systole, electrocardiogram in.. 575
Venous thrombosis, clinical studies in.... 277
Verity, Lloyd E. Clinical study of ten cases of polycythemia vera 319
Version, prophylactic external; breech presentations 415
Vessie, P. R. Wanderlust impulse..... 19
Veteran's Bureau, medical work in..... 449
Vincent, Swale. (See supplement index.)
Vinson, Porter P. (See supplement index.)
Virchow, Rudolf, biographical sketch of.. 499
Virilism, adrenal, complicated by diabetes insipidus 573
Vital statistics, French..... 566
Vitamines 503
Voltaire on smallpox..... 82
Volvulus of small intestine in children.... 626

WALDBOTT, George L Treatment of pneumonia 536
Wanderlust impulse 19
Wassermann and Kahn reactions..... 304
reaction in relation to insulin..... 307
Water excretion, influence of blood pressure response to sodium nitrite on.... 255
Wesley, John, biographical sketch of..... 180
West, James N. (See supplement index.)
Whitman, Willis A. (See supplement index.)
Williams, W. Roger. Teratoid tumors and teratology 365
Willis, George Stuart. (See supplement index.)
Willius, Fredrick A., and Fitzpatrick, Julia. Life expectancy with aortic regurgitation 417
Willoughby, M. K. Profuse hematuria successfully treated by oral administration of a coagulant prescribed for patient's use 334
Wilner, Anna S. (See supplement index.)
Wilson, Gordon. Idle thoughts on medical education 309
Wilson, Samuel M. Is tonsillitis merely a symptom? 209
Winslow, foramen of, hernia through.... 626
Winsor, Henry. Heterotopia of the central nervous system in relation to malformation of body segments and nervous diseases 327, 385
Wolf, George D. (See supplement index.)
Woman surgeon, remarkable 238
Women, chronic dyspepsias of 361
health of 343
Workers, health of 504
Wright, James T. Synopsis of physiotherapy to date 483
Wright, Jonathan. Galen's commentaries on kidney disease 603
Hippocratic nephritis 230
Kidney physiology and anatomy according to Hippocrates and Aristotle..28, 78
Use of the kidney according to Galen... 390

X RAY, effect of on leucemia..... 229
filtered, in treatment of lupus erythematosus 530
influence of, on endocrine glands..... 585
therapy in exophthalmic goitre..... 471
treatment of lower dorsal region followed by hyperemesis and hematemesis 546
Xanthoma diabeticorum 307

ZINC ionization in treatment of suppurative otitis media 126

LIST OF ILLUSTRATIONS TO VOLUME CXX

PAGE

Abdominal postoperative infection. Two illustrations 473–476
Addison, Thomas. One portrait 339
Ala deformities, operation for. Two illustrations 72–73
Allgemeine Krankenhaus. Two illustrations 242–244
Amsterdam Institute for Brain Investigation. One illustration 263
Angina pectoris, surgical treatment of. Three illustrations 311–314
Aortic regurgitation, life expectancy with. One chart 417–421
Barro Colorado Island Research Laboratory. Three illustrations 38–39
Auscultatory percussion and palpation. Eighteen illustrations 367–371
Bellevue Hospital fifty years ago. Nine illustrations 551–557
Bolk, Louis. One portrait 261
Brown-Séquard, Charles Edouard. One portrait. 31
de Boer, S. One portrait 261
de Kleijn, A. One portrait 261
Empyema, acute. Four illustrations 429–433
Esophagus, foreign bodies in. One illustration 168–170
Examination of bile. Forty illustrations. 9–13, 60–62
Face, congenital malformations of. Two illustrations of 5–8
Familial diseases of locomotion. One chart. 257–260
Gynecology, radium therapy in. Two illustrations 101–107
Hall, G. Stanley. One portrait 23
Hay fever. Two illustrations 4–5
Hernia, inguinal, operation for. Five illustrations 57–59

PAGE

Heterotopia of central nervous system. Fifteen illustrations 327–332, 385–386
Hippocratic nephritis. One illustration 230–232
Hunter, John. One portrait 130
Insulin dosage. Two charts 372–374
Janeway, Edward H. One portrait 553
Jelgersma, E. One portrait 261
Jenner, Edward. One portrait 81
Laennec. One portrait 287
Lister, Lord. One portrait 445
Magnus, R. One portrait 261
Maxillary sinus, diseases of. Two illustrations 582–584
Osteitis deformans. Two illustrations 62–64
Outdoor sleeping. Six illustrations 478–481
Phlebitis migrans. One illustration 64–68
Pyloric stenosis. Three illustrations 17–19
Rectal surgery abroad. Three illustrations. 490–493
Retractor for amputations of extremities. Three illustrations 171–172
Robinson, Andrew R. One portrait 240
Roman physician, unknown. One portrait 391
Sands, Henry M. One portrait 552
Sayre, Lewis A. One portrait 553
Stomach, primary sarcoma of. Four illustrations 161–164
Temple of Æsculapius at Cos. One illustration. 29
Tongue, foreign bodies in. Two illustrations 375–377
Transfusion apparatus. Two illustrations 171
Vaporizing tubes. One illustration 26–27
Uroscopy. One illustration 604–605
Wertheim Salomonson, J. K. A. One portrait. 260
Winkler, C. One portrait 261
Woods, James R. One portrait 552

INDEX TO PAGES

July 2d 1-52
July 15th 53-100
August 6th 101-152
August 20th 153-200
September 3rd 201-256
September 17th 257-308
October 1st 309-368
October 15th 369-410
November 5th 411-472
November 19th 473-516
December 3rd 517-576
December 17th 577-628

INDEX TO SUPPLEMENT—VOLUME CXX

PAGE.

ABDOMEN, key to.....cvii
tumor of xxv
Abscess of lung, convalescent treatment of..xii
Adenoids in infants.....clxxviii
Adrenalinuria in relation to hyperglycemia...lix
Ahlswede, H. Edward, and Busch, Werner. Bismuth therapy of syphilis with oxybenzoic acid compound.....xcv
Age, old, harmfulness of caffeine and value of alcohol in.....clxiii
Aged, anesthesia in operations upon....clxxiii
nutrition of clxiv
Alcohol, value of, in old age.....clxii
Allergy as factor in idiopathic epilepsy...cxvii
Almour, Ralph. Conservation of hearing in suppurative middle ear diseases of childhood clxxviii
Amaurotic family idiocy.....cxxiii
Amster, J. Lewis. Local and regional anesthesia in operations on aged.....clxxiii
Anesthesia in operations on aged.....clxxiii
Angioma of larynx.....xiv
Appendectomy cvii
Appendix, disease of, simulating gastroduodenal ulceration xcvii
Appendoröntgenography in relation to surgical intervention cx
Arteriosclerosis, decrescent clxix
Auricular fibrillation, quinidine sulphate in lxxviii

BACTERIAL endocarditis, subacute, complicating pulmonary tuberculosis.....v
Beinfield, Henry H. Treatment of tonsillar hemorrhage xi
Besser, Herman. New technic for investigating maxillary sinuses by x rays.....x
Bishop, Louis Faugères. Mitral stenosis..lxxvii
Senile heart clxi
Bismuth therapy of syphilis with oxybenzoic acid compound xcv
Boas, Ernst P. Decrescent arteriosclerosis..clxix
Significance and consequences of hypertension lxxii
Bones, long, osteomyelitis in.....cxxxii
Boorstein, Samuel W. Fractures in region of elbow joint.....cxxxiv
Bradycardia lxv
Brahdy, M. Bernard. Preparation of lactic acid milk cxcii
Brain tumors, localization of.....cxxi
Bronchus, foreign body in.....xv
Brown, Sanger, 2nd. Psychopathic child..xlvi
Bush, A. D. Doses for children.....lxxxiv
Byrd, Hiram. Blocking off remote pain at nasal ganglia cxxvi

CAFFEINE, harmfulness of, in old age..clxiii
Cancer following luetic necrosis of frontal bone.....lxxxv
Cancer of colon xvii
of esophagus, metastasis from.....xix
of hepatic flexure of colon.....xxviii
of uterus, radium in treatment of....clxviii
Carcinoma of papilla of Vater.....ci
Carter, William Wesley. Adenoids in infancy, importance of early treatment..clxxvii
Cecopexy cvii
Cecoplication cvii
Chest, spinal metastases with latent primary focus in xx
Child, psychopathic xlvi
Children, conservation of hearing in....clxxviii
doses for clxxiv
goitre in clxxv
pyelitis in cxc
suppurative diseases of middle ear of..clxxviii
Colectomy cvii
Colon, cancer of.....xvii
hepatic flexure of cancer of.....xxviii
Complement fixation test in syphilis....lxxxvii
Confession, false xliii
Convalescent treatment of lung abscess....xii
Croup, differential diagnosis and treatment...vii
Cumston, Charles Greene. Progress of Italian syphilographers lxxxvi

DECRESCENT arteriosclerosis clxix
Deutschman, D. Prevention of perineal lacerations by episiotomy cl
Diet for aged clxiv
in causation of epilepsy cxv
Doses for children.....clxxiv
Douglas, Gilbert Franklin. Importance of early diagnosis in ectopic gestation....cliii
Duncan, Harry A. Retrorectal tumor.....cviii

EAR, middle, suppurative diseases of in children clxxviii
Ectopic gestation, early diagnosis of..cliii
Einhorn, Max, and Stetten, deWitt. Carcinoma of papilla of Vater ci

PAGE.

Elbow joint, fractures of.....cxxxiv
Encephalitic features of 1921-22 influenza epidemic xlviii
Endocarditis, subacute bacterial, complicating pulmonary tuberculosis v
Endocrine disturbances in rhinological and laryngological cases lxiii
Epilepsy, diet in causation of.....xcv
idiopathic, allergy as factor in.....cxvii
Episiotomy, modified prophylactic.....cl
Epstein, J. Amaurotic family idiocy.....cxxiii
Esophagus, cancer of, metastasis from.....xix

FIBRILLATION, auricular, quinidine sulphate in lxxviii
Fibroid tumors of uterus.....cxlv
radium treatment of cxlvi
Fisher, William A., and Friedenwald, Julius. Unusual massive tumor of abdomen xxv
Foreign body in bronchus xv
Friedenwald, Julius, and Fisher, William A. Unusual massive tumor of abdomen xxv
Friedman, Joseph. Appendoröntgenography in relation to surgical intervention.....cx
Friend, Herman. Adrenalinuria, in relation to hyperglycemia and clinical possibilities lix
Fractures, diagnosis and treatment of....cxxxix
of elbow joint.....cxxxiv
Frontal bone, luetic necrosis of, followed by cancer lxxxv

GANGLIA, nasal, blocking off pain at...cxxvi
Gastroduodenal ulceration simulated by disease of appendix.....xcvii
Gestation, ectopic, early diagnosis of.....cliii
Gibbon, Robert L. Acute intussusception in infants clxxx
Gillett, A. Scott. Key to the abdomen.....cvii
Gillette, Norris W. Differential diagnosis of thyroid gland liii
Goitre, syphilitic exophthalmic.....xc
in children clxxxv
Goldstein, Leopold. Spontaneous rupture of uterus clvi
Gordon, Alfred. Nervous and mental phenomena following chronic intoxication with valerian cxiii
Grant, Francis G. Mechanical aids in localization of brain tumors.....cxxi
Greenbaum, Sigmund S. Clinical significance of negative outcome of complement fixation test in syphilis.....lxxxvii
Growths, new, ligature treatment of.....xxv

HALLILAY, W. H. Operative treatment of osteomyelitis in long bones.....cxxxii
Hearing, conservation of, in children....clxxviii
Heart, senile clxi
Hematocele following splenectomy.....cxii
Hemorrhage, tonsillar, treatment of.....xi
Hepatic flexure of colon, cancer of.....xxviii
Heyd, Charles Gordon. Mimicry of gastroduodenal ulceration by disease of appendix xcvii
Hubbard, L. D. Luminal in excited phases of mental illness.....cxix
Hubert, Louis. Endocrine disturbances in rhinological and laryngological cases..lxiii
Hydatiform mole, toxemia of pregnancy complicating clv
Hymanson, A. Pyelitis in infants and children cxc
Hyperglycemia and adrenalinuria lix
Hypertension, significance and consequences lxxii

IDIOPATHIC epilepsy, allergy as factor in cxvii
Idiocy, amaurotic family.....cxxiii
Infants, acute intussusception in.....clxxx
adenoids in clxxviii
pyelitis in.....cxc
Influenza epidemic in 1921-22, encephalitic features of.....xlviii
Intussusception, acute, in infants.....clxxx
Islets of Langerhans and functions of pancreas xlix
Italian syphilographers, progress of.....lxxxvi

JOINT, elbow, fractures of.....cxxxiv

KAHN flocculation reaction in tuberculosis xiii
Keller, Henry. Diagnosis and treatment of fractures cxxxix
Kennedy, William H. Superiority of radium over surgery in cancer of uterus..clxviii

PAGE.

Keratitis, syphilitic interstitial, x ray treatment of xcvi
Kilduffe, Robert A. Incidence of Kahn flocculation reaction in tuberculosis....xiii
Klapper, Harry. Convalescent treatment of lung abscess xii
Knee joint injuries.....cxxviii

LACERATIONS, perineal, prevention of....cl
Lactic acid milk, preparation of.....cxcii
Langerhans, islets of, and functions of pancreas xlix
Laryngology and endocrine disturbances..lxiii
Larynx, angioma of.....xiv
Ligature treatment of new growths.....xxv
Luetic necrosis of frontal bone followed by cancer lxxxv
Luminal in mental illness.....cxix
Lung abscess, convalescent treatment of....xii

McCREADY, E. Bosworth, and Ray, Henry M. Allergy as factor in etiology of idiopathic epilepsy.....cxvii
Maxillary sinuses, new technic for investigation by x ray.....x
May, Arnold H. Ligature treatment of new growths xxvii
Mental illness, use of luminal in cxix
Metastases, spinal, with latent primary focus in chest.....xx
Metastasis from cancer of esophagus.....xix
Mental phenomena following chronic intoxication with valerian.....cxi
Meyer, William H. Röntgenotherapy in myoma uteri clxvii
Milk, lactic acid, preparation of.....cxcii
Mitral stenosis lxxvii
Moehlig, Robert C. Selective tissue action of posterior pituitary gland.....lv
Moncalvi. Encephalitic features of the 1921-1922 influenza epidemic.....xlviii
Montgomery, Douglass W. Luetic necrosis of frontal bone followed by cancer....lxxxv
Myoma uteri, röntgenotherapy in.....clxvii

NASAL ganglia, blocking off pain at....cxxvi
Necrosis, luetic, of frontal bone followed by cancer lxxxv
Nervous phenomena following chronic intoxication with valerian.....cxi
Neuhof, S. Quinidine sulphate in auricular fibrillation lxxviii
New, Gordon B., and Vinson, Porter B. Metastasis from symptomless cancer of esophagus xix
Nose, syphilitic, repair of.....lxxxi
Nutrition of aged.....clxiv

OBERNDORF, C. P. Technical problems in psychoanalysis xxxix
Oculomotor paralysis, syphilitic.....xcv
Ogilvy, Charles. Knee joint injuries....cxxviii
Organic conditions, psychoanalysis of....xxxiv
Osborne, Oliver T. Harmfulness of caffeine and value of alcohol in old age.....clxiii
Osteomyelitis in long bones.....cxxxii
Oxybenzoic acid compound in bismuth therapy of syphilis.....xcv

PAIN blocked off at nasal ganglia.....cxxvi
Pancreas, functions of, and islets of Langerhans xlix
Papilla of Vater, carcinoma of.....ci
Paralysis, oculomotor, syphilitic.....xcv
Parsons-Smith, B. T. Bradycardia.....lxv
Perineum, preservation of cl
Peutot, Joseph. Cancer of hepatic flexure of colon xxviii
Philips, Herman B. Hematocele following splenectomy shown by pneumocolon röntgen examination cxii
Pituitary gland, posterior, selective tissue action of lv
Pneumonia, senile clxvi
Pneumocolon, röntgen examination demonstrating hematocele of.....cxii
Pregnancy, toxemia of, complicating hydatiform mole clv
Psychoanalysis of false confession.....xliii
of organic conditions.....xxxiv
selection of suitable cases for.....xxxv
technical problems in.....xxxix
Psychopathic child xlvi
Pyelitis in infants and children.....cxc

QUINIDINE sulphate in auricular fibrillation lxxviii

RADIUM in treatment of cancer of the uterus clxviii
Rank, Otto. Psychoanalysis of organic conditions xxxiii

PAGE.

Ray, Henry M., and McCready, E. Bosworth. Allergy as factor in etiology of idiopathic epilepsy cxvii
Reaction, Kahn flocculation, in tuberculosis..xiii
Rectum, tumor of cviii
Reed, Ralph. Note on false confession..... xliii
Rhinology and endocrine disturbances..... lxiii
Röntgen examination, pneumocolon, demonstrating hematocele cxii
Röntgenotherapy in myoma uteri..... cxlvii
Rose, Robert Hugh. Nutrition of aged..... clxiv
Rosenbaum, Charles. Oculomotor paralysis of syphilitic origin..... xcv
Rupture of uterus, spontaneous..... clvi

SCHOENHEIT, Edward W. Diagnosis of foreign body in a bronchus xv
Scholz, Thomas. Diagnosis of spinal metastases having clinically latent primary focus within the chest..... xx
Schulmann, Ernest. Diagnosis and treatment of syphilitic exophthalmic goitre...xc
Senile heart clxi
pneumonia clxvi
Sheehan, J. Eastman. Repair of syphilitic nose lxxxi
Silver salvarsan in syphilis..... xciii
Sinuses, maxillary, new technic for investigation by x ray..... x
Slater, S. A. History and symptoms as aid in diagnosis of pulmonary tuberculosis..... i
Slesinger, E. G. Cancer of colon..... xvii
Smiley, Irving. Toxemia of pregnancy complicating hydatiform mole clv
Spinal metastases with latent primary focus in chest xx
Splenectomy followed by hematocele..... cxii

PAGE.

Stenosis, mitral lxxvii
Stern, Adolph. Selection of cases suitable for psychoanalysis..... xxxv
Stetten, deWitt, and Einhorn, Max. Carcinoma of papilla of Vater..... ci
Stivelman, Barnet P. Subacute bacterial endocarditis complicating pulmonary tuberculosis v
Swetlow, George. Croup: its differential diagnosis and treatment vii
Syphilis, complement fixation test in..... lxxxvii
oxybenzoic acid compound in bismuth therapy of xcv
silver salvarsan in xciii
Syphilitic exophthalmic goitre..... xc
interstitial keratitis, x ray treatment of..xcvi
nose, repair of lxxxi
oculomotor paralysis..... xcv
Syphilographers, Italian, progress of..... lxxxvi

TEST, complement fixation, in syphilis..lxxxvii
Thewlis, Malford W. Senile pneumonia clxvi
Thyroid gland, differential diagnosis..... liii
Tonsillar hemorrhage, treatment of..... xi
Toxemia of pregnancy complicating hydatiform mole clv
Tracy, Edward A. Diet in causation of epilepsy cxv
Tuberculosis, Kahn flocculation reaction in..xiii
pulmonary, diagnosis of..... i
subacute bacterial endocarditis as complication v
Tumor, abdominal xxv
brain, localization of..... cxxi
fibroid, of uterus..... cxlv
radium treatment of..... cxlvi

PAGE.

Tumor, litature treatment of..... xxv
retrorectal cviii

ULCERATION, gastroduodenal, similated by disease of appendix..... xcvii
Uterus, cancer of, radium in treatment of cxlviii
fibroid tumors of..... cxlv
radium treatment of..... cxlvi
myomata of, röntgenotherapy in..... cxlvii
spontaneous rupture of..... clvi

VALERIAN, nervous and mental phenomena following use of xci
Vater, carcinoma of papilla of..... ci
Vincent, Swale. Islets of Langerhans and functions of pancreas..... xlix
Vinson, Porter P., and New, Gordon B. Metastasis from symptomless cancer of esophagus xix

WEST, James N. Treatment of fibroid tumors of uterus cxlv
Whitman, Willis A. Silver salvarsan in treatment of syphilis xciii
Willis, George Stuart. Radium treatment of fibroid tumors of uterus..... cxlvi
Wilner, Anna S. Simple goitre in children clxxxv
Wolf, George D. Angioma of the larynx..xiv

XRAY, new technic for investigation of maxillary sinuses by..... x
treatment of syphilitic interstitial keratitis xcvi

INDEX TO PAGES OF SUPPLEMENT

July 2d ..... i-xvi
July 16th ..... xvii-xxxii
August 6th ..... xxxiii-xlviii
August 20th ..... xlix-lxiv
September 3d ..... lxv-lxxx
September 17th ..... lxxxi-xcvi
October 1st ..... xcvii-cxii
October 15th ..... cxiii-cxxviii
November 5th ..... cxxix-cxliv
November 19th ..... cxlv-clx
December 3d ..... clxi-clxxvi
December 17th ..... clxxvii-cxcii

LIST OF ILLUSTRATIONS TO SUPPLEMENT

Abdomen, tumor of. Two illustrations...xxv–xxvii
Amaurotic family idiocy. Three illustrations ..... cxxiii–cxxvi
Appendoröntgenography. Three illustrations.cx–cxi
Bradycardia. Eight illustrations..... lxv–lxxii
Colon, cancer of hepatic flexure of. One illustration ..... xxviii–xxxii
Elbow joint, fractures in region of. Seven illustrations ..... cxxxiv–cxxxviii
Esophagus, cancer of. Two illustrations.... xix–xx
Fractures, treatment of. Seven illustrations. cxxxix–cxliv
Frontal bone, luetic necrosis of. One illustration lxxxv
Heart, senile. Four illustrations ..... clxi–clxiii
Hematocele following splenectomy. One illustration cxii
Larynx, angioma of. Two illustrations..... xiv–xv
Maxillary sinuses. Two illustrations x
Mitral stenosis. One illustration..... lxxvii–lxxviii
Osteomyelitis in long bones. Four illustrations ..... cxxxii–cxxxiv
Papilla of Vater, carcinoma of. Nine illustrations ..... ci–cvi
Perineum, preservation of by episiotomy. Three illustrations ..... cl–cliii
Spinal metastases. Six illustrations ..... xx–xxiv
Syphilitic nose, repair of. Twenty-four illustrations ..... lxxxi–lxxxiv

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 1 NEW YORK, WEDNESDAY, JULY 2, 1924 WHOLE No. 2284

Medical Education

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In recent years there has been much talk and many pages have been printed upon the subject of education. Writers like Professor McAndrews, who has recently been called from New York to take charge of the Chicago schools, tell us at length and in detail of the many improvements that have been introduced into the methods of the public schools, while other writers are equally positive that our system of education does not educate, that after the student has gone through high school, a state university, or even one of the great colleges, he still is poorly prepared for his life work. Medical education has also attracted much attention and has undergone almost a revolutionary change since the beginning of the present century. Some of these changes have been necessary on account of the progress of medicine; others are due to the desire for a change and the fact that the medical profession has lost control of the education of those who would enter its ranks.

That it is the chief function of a medical college to prepare its students for what in the country districts is still called general practice is not doubted by many physicians. If one wishes to practise a specialty he should acquire the special knowledge and the special technical skill after receiving his degree and serving his year as an interne in the hospital. Two or three years in active practice in a rural community, where his services are now much needed, and where consultations are obtained with difficulty, would give him a still firmer foundation upon which to rest the knowledge of his chosen specialty.

But just how best to prepare the student for general practice is a question that is not yet settled. With the advent of the laboratory came the fulltime professor. No one would argue that his teaching is less important than that of the clinical teacher but on the other hand it must be recognized that many laboratory men have never graduated in medicine, and few of them have practised medicine for any length of time, if at all. Therefore, they have not the viewpoint of the doctor, the man who carries his knowledge to the bedside and applies it to the cure if possible of the sick, or if that be not possible to the relief of suffering. For this reason their teaching too often impresses the student as being a thing apart from the practice of their profession. This is a difficulty that at present there seems no way to remove. The best that can be done is to supply the deficiency during the last two years. It is therefore of the greatest importance that some of the teachers for the last two years be men who have practised medicine or surgery with the environment most of the students will have when they practise it.

Establishing and maintaining laboratories is expensive. "The laborer is worthy of his hire" and he must have equipment with which to labor. The fees of the students will not support a modern medical college. Therefore the colleges some years ago felt they must have endowment. If they had gone after it and secured it in a direct manner it would have been better for all concerned. But few men like to beg for money. It is especially distasteful to doctors. They would prefer to "let George do it." So instead of the medical colleges begging for money they knocked at the doors of the universities and asked for lodging. They were admitted and soon the universities found their new lodgers a heavy drain on the family purse and they begged for help. The help was to be had from the foundations if the universities would force their lodgers to do certain things. Figuratively speaking, they must all wear the same uniform like the bell boys of a hotel. The medical profession lost control of the education of those to come after. It sold its birthright for a pot of gold and it did not get the gold. Its guardians took charge of that.

The guardian and the donor concluded because the professor of mathematics or geology or Latin did not have any other occupation than teaching, the professor of therapeutics or of operative surgery should not have. Fulltime men for every chair was the goal ultimately to be reached. To have a doctor in actual practice teach anything was too much like the carpenter, the bricklayer, or the blacksmith teaching his apprentice.

The men in charge of the big foundations were not satisfied to make an experiment of fulltime men in the practical departments in one or two schools but have insisted that the experiment be a wholesale one and that every school that would receive their aid must promise sooner or later to use only fulltime men as heads of departments. The scheme has not worked as its originators anticipated. One of the reasons for its lack of success is that the leading

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practitioners of medicine or surgery or the various specialties in a given community no longer take any real interest in the medical college. Another one is that the teachers are nearly always transplanted from one community to another and in the new environment they are not at home. They do not understand the currents and crosscurrents that always exist in the medical profession of a city and it takes them months and years to acquire this knowledge and learn how to use it for the benefit of the institution with which they are connected.

In former days the young men in a town where a college was situated felt that if they took a subordinate position and filled it satisfactorily they were in line for promotion. They had a chance some time to become a professor. The critics of the old regime claim that this was a bad thing because a man expected to be promoted on account of seniority in service as in the army, but this statement is not true. He knew perfectly well that there were others striving for the coveted position and that he must do better than they or it would never be his. This certainly was an incentive to the younger members of the profession to strive for recognition by the profession rather than strive for a large and lucrative practice. It therefore may be said that putting imported fulltime men into the positions of honor has a tendency still further to commercialize the practice of the healing art. Commercialism is the cancer that is destroying the vitals of medicine as a profession. The young man beginning his life work as a doctor now does not think of it as a work of service, but a work for the coin of the realm. He is not willing to begin at the bottom. He will not do charity for charity's sake. He may do it for a reward that is slightly deferred but not so deferred that it will be received in heaven. Ferrero, the Italian publicist, has pointed out the fact that the most obvious fault of Americans when compared with the nationals of an older culture is that they mistake bigness for greatness—quantity for quality. Our colleges, especially the state and municipal universities, seem to be victims of this delusion. The more students they have the bigger they are, therefore, in their own estimation, the greater. I know of one university that employs a publicity man. Is it surprising that a young doctor educated in this atmosphere measures his success by the number of patients he has rather than by the benefit they derive from his treatment?

Possibly the worst feature of the university advertising and the publicity seeking of the fulltime professor is that it is a wolf masquerading in sheep's clothing. The fulltime man professes the highest ideals but he doesn't live up to them. From the very nature of his position he enters into unfair competition with his competitors, all the time assuming an air of superiority and apparently feeling that the patient that falls under his care is so much better off than if she had gone to some other surgeon that it matters not how she is influenced to consult him. But I find out that they make just as many mistakes in diagnosis as the average surgeon.

This publicity craze is not only affecting the graduates of the present time but those who have been out longer seem to be inoculated with the same germ. The College of Surgeons was said to be organized to improve the quality of the surgery being done in this country and the ethics of those doing it. Yet at its recent meeting in Chicago its activities were so featured in the daily papers that one levelheaded doctor was led to remark: "If the American Medical Association is not able to handle the situation in such fashion that it will not arise in the future, our attitude toward the cults should be one of brotherly love and affection." *Harper's,* for February, contains a long article by a staff correspondent, evidently inspired by some one high in the councils of the college. The gist of this article may be stated in two short sentences—*"For the love of Mike" do not let any one operate on you if he cannot write F.A.C.S. after his name. Members of the college regard it as no sin to steal a patient from a surgeon who is not a member.* Every one who has given the matter any thought knows there are many good surgeons outside the college and many poor ones in it. We would humbly suggest the following lines as a part of the college song:

> "Count that day lost, whose low descending sun"
> Finds thee with no publicity secured,
> No advertising done.

It is asserted for the fulltime professor that he has acquired the art of teaching. To just what normal school he went I have never yet been told and have never been convinced that he is altogether a better teacher than the man of experience in practice. Let us consider for a minute what a teacher should do for his pupils. First, he should impart knowledge—it should be imparted in a way that interests the student and in a way that makes the students anxious to learn more about a given subject and it should be imparted in such a way as to give the student the proper perspective, that is, a proper emphasis should be placed upon the more important things, the things that the practitioner must know and must know he knows. As to the less important, he often has an opportunity to refresh his memory about. Who is best able to recognize these things, the man who practises in the well equipped hospital with a laboratory at his command and consultants at his beck and call, or the man who is seeing patients in their own homes and seeing them in consultation in rural communities where it is imperative that he make at least a tentative diagnosis after one examination of the patient. It seems to me the answer is selfevident.

A friend of mine was present at a quiz on diseases of children where the class had been trained by a fulltime professor. The disease under discussion was whooping cough. The students told everything to be known about the disease but failed to mention the whoop. More than one skillful practitioner has been called from his sleep at night because the baby had a cough and has made a diagnosis and saved himself a trip by hearing the baby cough by means of the telephone.

Another function of the teacher is to inspire the student. Who inspires the young man most? It is the mature man who occupies the position to which the young man hopes to attain. Youth makes a hero of a man who wins, let it be in the prize ring, on the football field, a political race, or any other place where a man struggles against competitors. The practitioner who has won his laurels in the open field appeals more to his imagination than one who lives a life sheltered by academic walls.

So anxious have colleges been to fill their chairs with fulltime men that they call men fulltime whether they are or not. They never take up a man who is engaged in active practice and pay him so much a year to devote so many hours to the college work but they do bring strange men, pay them for their work, and then let them devote part of their time to practice. Now this looks like tweedledum and tweedledee to me, but the learned authorities insist that there is a difference, but I have never had one tell me just what the difference is. In a medical college with which I am familiar the professor of medicine draws a salary, with the privilege of seeing cases in consultation; the professor of physiology draws a salary with the same privilege; the professor of pediatrics draws a salary with the same privilege; and the professor of surgery draws a salary with the same privilege and some perquisites besides, but the professor of surgery draws no salary, although he devotes as many hours to college and hospital teaching as either of the other gentlemen named. The professor of obstetrics is a man of great ability. He writes better on the mechanism of labor than any other author whose writings I have read, but he is not now paid and I presume as soon as the foundation will furnish a little more money this man who practises and teaches will be succeeded by a man who teaches and practises.

Along with the fulltime professor came the fulltime dean. Many of my readers will recall the opera of *Pinafore* and the little song in which the young naval officer is advised that if he would rise to a high rank in the service, he must be sure not to go to sea. Some of the universities in their selection of deans would seem to have acted on this principle instead of taking a man who had been teaching medical students for many years or a man who had a large consultation practice, and therefore knows what the young practitioner needs. They select a retired army or naval medical officer or some one whose actual contact with the working profession is equally meagre. Such a man can, in the seclusion of his office, draw a beautiful diagram showing how a medical college teaching corps should look on paper, but he is unable to draw a diagram that shows how best to utilize the material that he has at his disposal. He seems to forget that doctors are men as well as doctors. Most of them have their strong points and their weak points. Their strength must be used for the good of the institution, their weaknesses kept in the background. The president of the university not being a physician of course does not have a physician's viewpoint and is not familiar with the traditions of medicine. A dean of the type described is poorly equipped to enlighten him on these matters. The president of a university told a friend of mine recently that he didn't feel that a medical college was under any obligation to the teachers who had served the institution for years "without money and without price" because he felt that in some way they must have been paid for their services or they would not have rendered them. One would think such a man had never heard of the charity work done by almost every physician in public hospitals and in private practice, that he did not recognize that one may be fond of teaching for teaching's sake, and that the oath of Hippocrates, which has been followed in spirit by the medical profession for so many centuries, makes it incumbent upon a doctor to impart what he knows to those who are following him. He does not recognize the fact that as some men advance in years they like to continue to associate with the young. I have done nothing else in my career that I feel has made my life so worthwhile as having developed four young men to be good abdominal surgeons and gynecologists, but the thing that comes next in importance is the influence I have had on the medical students whom it has been my privilege to teach.

The fulltime man treating only charity patients does not have to please the patient to keep him under his care. Therefore he does not take the trouble to do those things which may seem trivial when considered singly but in the aggregate add much to the patient's comfort of body and mind and in so doing sometimes tips the trembling balance in which the issues of life and death are being weighed in favor of the former and saves a human life. Not using these measures he fails to appreciate their value and does not teach them. The fulltime man teaches about all there is to know concerning those serious diseases that are inevitably fatal in a rather large percentage of cases and the rarer the disease the more he is delighted to expatiate upon it, but those lesser ills that will furnish the young general practitioner with ninety per cent. of his work are ignored or receive very scant attention. It is true that time will cure many of these ills sooner or later but the patient does not know this and probably will not believe it if told. From his viewpoint a doctor that cannot do something to help in or hurry the cure is a poor excuse for a doctor. Receiving little attention and no benefit from the doctor he tries a representative of one of the cults, where he at least gets a sympathetic hearing. The doctor has lost a patient, the profession has lost caste. This patient tells his experience to a friend whose symptoms, to him, seem very similar to his own. Number two goes where number one is supposed to have been cured, but number two's symptoms are produced by an organic disease whose early treatment is of the utmost importance and the time for receiving this treatment is frittered away while he is under the care of one who is incapable of recognizing the true nature of the disease. Who is to blame for this death?

Matthew Arnold expressed the wish of many men and many women when he wrote:

> Nor bring to see me cease to live
> Some doctor full of phrase and fame
> To shake his sapient head and give
> The ill he cannot cure a name.

This is the way medicine is practised by the pure scientist. The true practice of medicine is an art as well as a science. The artist selects his therapeutic measures as a skilled workman selects the tools to use. He cures his patient when it is possible and when it is not he prolongs life, and makes living more worthwhile, and at the end gives him the blessing of euthanasia. Art can only be taught by an artist and artists are few in the ranks of fulltime men.

In my opinion the fulltime professor may fill a useful place in clinical teaching of medicine or surgery but the services of the man in active practice with a broad experience, with love for his fellowman, with ability to teach, are indispensable.

Comfort for Hay Fever Subjects at Home

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Thousands of hay fever subjects make annual pilgrimages to hay fever resorts in order to escape the pollen infected atmosphere (Fig. 1) of their home surroundings. While this number has been materially reduced by the benefits of modern immunizing methods, the number is still exceedingly large.

In some cases, such a journey is considered a form of vacation, and causing no special hardship. In others, however, on account of impaired health, business or professional duties, or other reasons, such a trip is impracticable, or causes such a loss or inconvenience that any reasonable method of obtaining relief at home would be welcomed.

Hay fever subjects usually suffer more from their attack at night, and with a view of diminishing the number of inhaled pollen, many close the doors and windows of their room as far as possible. As most of the hay fever seasons occur during warm weather, such a method is not conducive to health or comfort.

An efficient method of making an apartment pollen proof is by means of an airwashing apparatus, made on the principle of those used with the modern heating and ventilating systems. While the expense of its installation precludes it from general use, it has special advantages for sanitariums, hotels and private residences in which the comfort of hay fever subjects justifies the expense.

The airwasher consists of three distinct parts (Fig. 2); the spray chamber, the eliminator plates, and the tank for catching the spray. Besides these, there is a recirculating group for supplying the water, and a screen or filter for removing the pollen and dirt from the water used in the spray chamber, as, for economy, the water is generally used over and over again, fresh water being replaced when required.

It is only from a rain of several hours' duration that thorough washing of the air results; consequently, when the air is passed through a spray chamber at a velocity of several hundred feet a minute, the length of time that it is in the chamber is exceedingly short, and the washing action of the spray is not as effective as nature's method, where the air is subjected to the washing action for hours at a time. Consequently, to obtain complete removal of dust, other devices are resorted to, and in this case the eliminators produce the desired result in both washing and eliminating.

FIG. 1.—Photomicrograph of atmospheric pollen plate, showing infestation of air with grass and ragweed pollen. × 200 diameters.

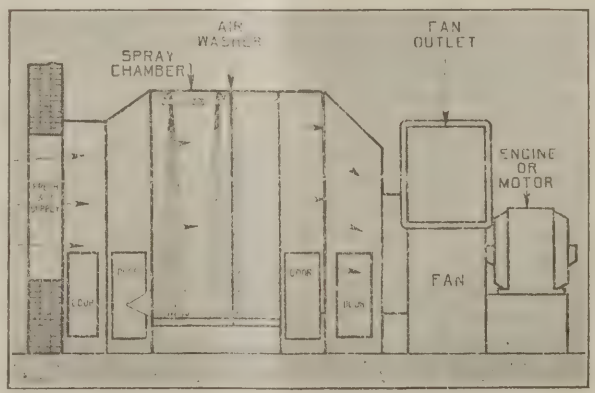

FIG. 2.—Airwashing system for hay fever pollens.

Due to the zigzag passageways, the air first strikes one surface and then another of the plates. As considerable moisture drifts along in the air, these plates become wet, and the surplus water is flowing over them all the time to the sump below. Due to the impinging action of the air on the plates, the dust and pollen particles adhere to the wet surface, and are washed into the sump. To make this action more positive, it is customary to provide nozzles adjacent to the eliminators, to keep them thoroughly washed down.

Eliminators form an important part in the air washer. The function of these is to remove the entrained water carried over by the air from the spray chamber before the air leaves the air washer. The eliminators are so designed that the air must change its direction several times and pass over the sharp edges of the metal sheets.

The sump is made of sheet metal, and is provided with a strainer and overflow, and the height of the water within it is maintained at a constant level by an automatic valve. It encloses the lower part of the spray chambers and the eliminators. A centrifugal pump drains the water from the sump through a strainer and recirculates it through the spray nozzles so that it can be used again.

The ventilation of the apartments protected from pollen by the airwasher, is accomplished by means of a centrifugal fan. This consists of a number of blades extending radially from a shaft, and presenting a slightly inclined surface to the air as they revolve. The air is drawn axially at the centre, and delivered from the tip of the blades in a tangential direction.

The fan forces the air through the airwasher into the apartments, and furnishes a continuous supply of air. The doors and windows are closed, so that there is no opportunity for pollen infected air to be drawn into the room from external sources, since the air is admitted only through the airwashing chamber. The fan maintains a slight pressure within the ventilated apartments, so that the tendency of the air is to flow outward and not inward. The escape of the air from the room is accomplished through the walls, cracks, spaces around the doors and windows, or through especially constructed vent flues such as are used in schools and theatres.

While the expense of this system prevents it from being adapted to smaller residences, a simplified form could be arranged which should add materially to the comfort of hay fever subjects.

MAISON BLANCHE ANNEX BUILDING.

Congenital Malformations of the Face

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Every species of animal has a type form. In man, particularly, we learn to recognize this standard pattern, within whose limits wide individual variations may occur without exciting either astonishment or curiosity. Especially is this true of the face, since, under ordinary circumstances, this is the most exposed part of our anatomy. Occasionally, an unfortunate person is born, who, through some abnormality of intrauterine development, presents a departure from this normal mold—is atypical. Such a condition is called a congenital malformation. When this malformation is of an extreme or greatly exaggerated variety, the resulting entity, whether alive or dead, composed of single, double, or multiple persons, is spoken of as a monster or teratism. The study of such monstrosities is known as teratology. The subject is an extremely broad one, and in a paper of this sort, even though limitation to the discussion of malformations of the face alone is sharply made, one can only hope to scratch the surface and give a superficial survey of the many atypical configurations which arise, and a brief presentation of the questions and speculations which they involve.

Ziegler divides etiological factors into two groups, the intrinsic and the extrinsic. Under the first he includes such malformations as are due to defects in the germ plasm, those which can be traced to an hereditary origin. Just how important is the rôle which heredity plays is an open question. Ochsner reports that there was only a small percentage of cases, approximately ten per cent., in which it could be determined that blood relations were similarly affected. In the Southern States, where family histories are more readily ascertained and where consanguinity might also be expected to reveal defective determinants, because of the frequent intermarriage of more or less directly related persons, heredity appears to be influential much more frequently than among children born in the Northern and Western States. This is particularly true of such abnormalities as harelip and cleft palate.

Usually, malformations may be referred to extrinsic causes, forces working upon the embryonic organism from without, resulting in inhibitions of development, failure of paired anlagen to unite, or exaggeration and hypertrophy of the tissues involved. Extrinsic factors may be divided into three groups, mechanical, metabolic and toxic. A monstrosity may be produced by one or all three of these types of injury.

The best example of mechanical variety of trauma is that produced by the entanglement of the fetus in the umbilical cord. A leg, arm or neck may become encircled and the parts distal to the heart atrophy or become necrotic. Concussions of the uterus may result in irreparable damage to the embryo if coming at a very early age. Later on in fetal life, trauma of this sort is more likely to result in a tearing loose of the developing person, resulting in local hemorrhage and disturbances in the placental circulation and thereby in the nourishment of the new organism. Pressure from the uterus or its membranes may be exerted upon the embryo, particularly when the amount of amniotic fluid is deficient. There may be an excessive amount of amniotic fluid which results in malformations due to pressure atrophy. Adhesions may occur between the embryo and its membranes; to what extent these are to be referred to "primary adherence and intergrowth and to what extent to inflammatory processes of later occurrence, is yet a disputed question." All that shows at birth, disregarding the more frightful monstrosities, is often just a cicatricial area. Of course, many varieties of mechanical lesions occur, but upon careful inspection the cause of the malformation is usually detectable.

Disorders of metabolism undoubtedly play a more important rôle than is usually assigned to them. Interference with the supply of oxygen and nourishment has already been alluded to as being secondary to mechanical injuries of various sorts. In the finely balanced chemical forces of the endocrine system, there are infinite possibilities for the disturbance

of factors controlling growth and development. The system itself has practically sovereign control over metabolic changes, as is evidenced by diseases of, and animal experimentation upon, the thyroid, thymus, epiphysis, testes, ovaries, hypophysis and so forth. If endocrine disorders can have such a profound effect upon the adult being, how much greater and more powerfully must they affect the embryonic organism.

Toxins of bacterial or maternal origin have their deleterious effects. Contaminations of the maternal blood, as in the infections and pathological conditions of the uterus, may exert a harmful influence upon the developing ovum. Psychic states of the mother undoubtedly result in leaving a stamp, either mental or physical, upon the child. Infectious diseases like syphilis may be transmitted through the placental circulation, and give rise to their characteristic lesions in the fetus. The earlier the damage occurs, the greater the extent of the injury.

It must be borne in mind, however, that, even though the incidence of these traumatic forces is far from rare, all these conditions lead more often to the death of the fetus and the expulsion of the embryo, than to the development of a malformation.

As to the actual effects of these injurious conditions, aside from the destructive histological and organic charges, most malformations can be traced to inhibited or arrested development during early embryonic life. This is especially true of phenomena like cleft palate and harelip in which the nasal and palatal processes fail to fuse as is normal. For a better understanding, therefore, of malformations, it is well to take a hasty glance at the embryology of the facial region.

It will be recalled that the face arises from one single and two paired anlagen. The frontonasal process, which, roughly speaking, goes to form the forehead and the nose, comes down from above, while below, on either side, are the maxillary and mandibular processes which arose from the division of the first branchial arch. Thus, about five weeks after conception, the primitive buccal cavity, formed by the bending forward of the cerebral vesicle over the end of the notochord, has a quinqueradiate appearance. The mandibular processes unite early across the midline to form the lower jaw. Next, the medial nasal process, elaborated by the frontonasal process, unites below with the lateral nasal process of the maxillary process, thus forming the anlagen of the external nares. The fusion takes place from within outwards and occurs as the processes meet, so that the primitive nasal cavities are never connected with the stomatodeum, or primitive mouth cavity. Later, the bucconasal membrane breaks through and the posterior nares are formed. An area on the frontonasal process is soon delineated, the area triangularis, which forms the tip and dorsum of the nose. The median nasal processes, mentioned above, are pushed close together and finally unite to form the septum of the nose. The maxillary processes send out palatal plates, which unite with each other in the midline about the eighth week of fetal life and at the same time blend with the lower border of the nasal septum. The anterior portions of these palatal plates unite before the posterior parts. Failure of fusion of these palatal plates results in a cleft palate, which leaves the buccal and nasal cavities continuous with each other in the midline, instead of merely at the posterior nares.

In the formation of the nasal skeleton, it is the swellings of the mucous membrane, in which the turbinates later develop, that are the important structures—the bone is the negative tissue. It is thought by many that the conchæ grow out from the septum of the nose, and attach themselves to the lateral wall, later losing their connections with the medial wall of the nose. The external nares are closed for a time by epithelial growths, formed at first from the median walls. They plug the nares and project from them, not being absorbed until about the fourth month. These may persist for quite some time, however, and have even been known to occur in the newborn.

The external ear is formed by the union of six swellings from the tissue adjoining the first branchial groove, three on the mandibular and three on the hyoid arch. These go to make up the tragus, helix, antihelix and antitragus. Back of these an auricular fold forms which unites with a similar fold just dorsal to the first branchial groove, to form the outer part of the pinna; the point of union of these two folds often marks the position of the satyr tubercle. Darwin's tubercle appears at about the middle of the free margin of the auricular fold and corresponds to the apex of the auricle in lower animals. In some people these areas are quite conspicuous, the person having pointed ears.

The commonest malformations are those having to do with the upper lip and the palate, as one must conclude after a moment's recollection of the embryology of these structures. If the maxillary processes fail to unite, harelip results. If the palatal plates do not meet in the midline, the individual is born with a cleft palate. The point of fusion of the maxillary and frontal processes may be marked by a cleft or just a scar running from the mouth to the eye. And so there may be many variations according to the amount of fusion of the various parts.

Malformations of the lips and cheeks are usually associated with defective bone development, although harelip may exist without the phenomenon of cleft palate; or the lip may be normal and the cleft be present. The degree of injury varies and may be unilateral or bilateral. A fissure of the first degree is one in which only a portion of the lip is involved; one of the second degree, where the cleft includes the entire length of the lip from the prolabium to the nose; while the third degree includes wide fissures extending completely through the lip and alveolar and palatal bony structures. These fissures may extend even up to the orbits and are sometimes associated with other startling deformities, such as cyclopia, or median eye. In the case of bilateral fissures of the third degree, the premaxillæ may protrude, and unless immediate surgical procedure is taken or a strip of adhesive tape is fastened across the upper lip, the deformity may grow rapidly worse after birth.

The usual cleft is between the maxilla and pre-

maxilla. Median lip and palate clefts, less common, are of two forms: there may be a simple cleft in the midline or the premaxillæ and nasal septum may be lacking, causing a flattening of the bridge of the nose and a broad median defect, flanked by the maxillary portions of the upper lip.

Oblique facial cleft is rather rare and may extend from the usual situation for harelip below, along the line of the nasal duct, to the inner canthus. It may be limited to the soft parts, showing sometimes only as a cicatrix (the most difficult to repair with good cosmetic effect), or it may also involve the bones, even laying open the antrum. Congenital facial scars, often associated with a cleft uvula, may be all that remains as witness of retarded embryonic development.

Fissures of the mandible are rather rare. There may be merely a lip defect in the median line or the chin may be cleft. Sometimes the lower jaw is entirely wanting, a condition known as agnathia. In this case, the ears are usually large, low down, and often touching in the midline below —synotia. Sometimes the face remains in its early condition of a large cleft, the mouth, nose and possibly the eyes, united in the same cavity. The maxilla may be abnormally small, or the mandible greatly developed, either condition resulting in a prognathous lower jaw. The deformity may be the other way round, and results in socalled "chinless wonders."

Occasionally the mouth is malformed. The lips may be fused together or else the oral opening may be small—microstomia—and may extend backwards as far as the ears. With this in mind, a congenital scar arising from the corner of the mouth and running backward almost to the tragus should excite no surprise.

Deformities of the auricles are usually unilateral, rarely bilateral, except for the pointed ears mentioned previously. Complete absence of the auricles is not frequent. The helix, antihelix or tragus may be defective or the whole structure stunted—microtia. Macrotia, an exceedingly large pinna, is fairly common. Once in a while supernumerary auricles occur, a condition of polyotia; these are unilateral and more or less perfect, and are preauricular in site, as a rule, although occasionally they occur on the neck, cheek or shoulder. Little tumors of fibrous tissue, covered with skin and having a core of cartilage, fibrochondromata, sometimes occur in front of the ear and are believed to be elaborated from the tissue of the branchial arches.

Fig. 1.—Congenital absence of nose and eyes.

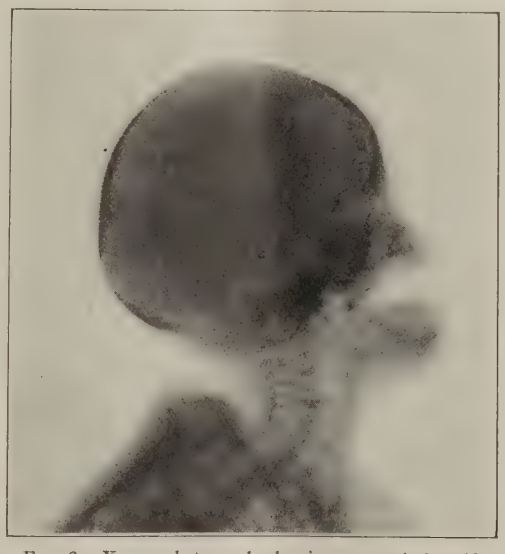

Fig. 2.—X ray photograph showing congenital malformation of face.

Rarely, the tongue may be entirely absent, or it may be cleft like a snake's, or half of it may be wanting or atrophied. When we speak of a person as being tonguetied, we mean that the frenum is usually short, fastening the tip to the floor of the mouth. This defect should always be sought in the newborn, and, if present, the tongue raised and the frenum, thus put on the stretch, cut across its centre with a blunt pointed scissors directed downwards. Sometimes the tongue is anchored to the floor of the mouth by folds of mucous membrane, a condition of ankyloglossia; it may be readily freed. Occasionally the tongue and its frenum are too long, permitting great mobility, and fatalities are on record from strangulation due to the swallowing of such an organ. Finally, a condition of great hypertrophy, known as macroglossia, may occur. This is due to a great increase in the connective tissue, secondary to lymphatic obstruction and dilatation. It is enlarged in all directions, protrudes from the mouth and is indented by the teeth, which interfere with the venous return, causing it to become purple in color. The mucous membrane becomes dry from exposure and assumes the appearance of skin, although saliva dribbles freely from beneath it.

Allusion has already been made to clefts and scars of the lips due to arrested development. One or both lips have also been known to be absent. A condition of macrocheilia, analogous to macroglossia, due to lymphatic obstruction, is fairly common. It usually affects the lower lip, causing great thickening and eversion, resulting in considerable deformity. The usual variety of this, however, is of luetic rather than of congenital origin.

When there is a third degree cleft of the palate, the nose and its septum are usually stunted or mal-

formed. Occasionally, the nose is completely lacking. Spurs and deviations of the septum are of frequent occurrence, as we all know. Sometimes the dorsum of the nose fails to rise and the nostrils appeal as blowholes at the base of the flat area triangularis.

Glaring deformities of the nose, whether of mechanical or toxic origin, are often accompanied by ocular malformations. In cyclopia, or single median eye, the nose is often displaced and appears as a tag of skin and fibrous tissue fastened to the forehead above the eye. The eyes may be only abnormally close together, or may occupy the same cavity, both structures being present. This is commoner than the presence of a single eye. Sometimes the lids are still fused together over optic structures which have failed to advance beyond their embryonic condition.

Congenital cerebral herniæ, in which the meninges, often accompanied by nervous tissue, occur in conjunction with cranial bone defects, and may appear about the eyes or forehead. A discussion of these is not within the scope of this paper, but they are mentioned here because they are among the commoner congenital defects.

Cases of giant growth or hypertrophy of one side of the face only have been recorded. Usually, however, the gigantism is unilateral for the whole body.

We come now to the more horrible of congenital malformations—those composed of two individuals—double monsters, socalled. All of them arise from a single ovum and develop from the same germinal vesicle. The development may be upset during segmentation, division of the twins being incomplete, or two entirely separated anlage may grow together again to form the dual teratism.

The simplest form of this malformation is that called a teratoma, in which the unfortunate twin occurs, usually in the mandible, as a sort of tumor, which, when opened, shows a great jumbling of a variety of tissues. The morphology of the tumor presents no semblance of human form.

It often happens that one of the twins has its development arrested and becomes joined to the other as a part of it. The more completely developed of the two is called the autosite, while the inhibited embryonic organism is termed the parasite. The latter may be variously developed, having divers organs, tissues, possibly extremities, and be almost as large as the autosite. When an acardiac individual of this sort is attached in the neighborhood of the jaw it is called an epignathus.

The heads of the twins may be united in the cranial, frontal or lateral regions, in which event the monstrosity is called a craniopagus, or, if the union is very intimate, a syncephalus. The faces may be equally or unequally developed and point the same way or in opposite directions. So many variations occur that classification is practically impossible.

In conclusion, a brief description of an interesting and unique anomaly will not be amiss, even though the subject of this thesis is not adhered to with rigidity.

On December 5, 1923, a female child, noseless and eyeless, was born. The delivery was perfectly normal, left occiput anterior, after a normal, full term pregnancy. The family history, so far as could be ascertained, was negative. The mother has always enjoyed the best of health and had had two previous confinements, resulting each time in the birth of a normal child; the first one was born on September 26, 1919, the second on August 17, 1921. Examination of the mother found her to be physically sound and to have normal pelvic measurements and no pelvic tumors. Upon the death of the child, it was impossible to obtain the body for autopsy, but photographs were taken and röntgenographs were used to supplement the physical examination.

The most striking thing about this monstrosity was the total absence of a nose. The eyelids were fused together over eyes which were felt to be rudimentary. The hard palate lay beneath the orbits, and the mouth, through which the individual respired, was constantly agape. The palatal plates, arched slightly more than is usually the case, had formed, and were fastened together in the midline by a plainly visible suture of fibrous tissue. There was a flat area of bone, covered with skin and superficial fascia, where the nose should have been. Evidently the growth of the nasal portion of the frontonasal process had been inhibited, and the maxillary processes had united and filled the space usually allotted to the nose. The skull showed no fontanelles nor suture lines, indicating a toxic etiology. Two pairs of branchial fibrochondromata were present, one set preauricular in position, the other attached to the skin above the sternoclavicular junctions. The mucous membranes of the anus and vagina were confluent, resulting in a cloaca such as birds and elasmobranchs possess. The teratism, aside from the malformations enumerated above, had a normal anatomical structure; the cranium was nicely shaped and the ribs, bones of the extremities, heart, lungs, stomach, kidneys, and intestines were, so far as could be discovered, without defects.

At birth, the monstrosity weighed three and half pounds and was in good physical condition. The mother refused to have anything to do with the child, which was therefore fed artificially. It experienced great difficulty in taking nourishment, since it had to stop and gasp for breath after every swallow. Six days after birth, on December 11th, it had gained one ounce, but lost this again by December 14th. It then began to lose weight steadily, until on December 18th it weighed three pounds and two ounces. Every effort was made to feed the child, but it became more and more difficult to nourish it. Finally on December 20, it died from inanition due to its inability to take sufficient nourishment.

In looking over the literature on congenital malformations of the face, it is surprising to find that the subject is not entirely a gruesome one. Remarkable results have been obtained with unfortunate persons, who, at first glance, seemed to be beyond repair. Some wonderful work has been done, and still remains to be done, in this field. With those individuals who live, good results are ordinarily obtainable, while those with the more marked malformations usually die in a short time after birth.

40 South Street.

A bibliography will be included in the author's reprints.

The Importance of the Direct Examination of Bile in the Diagnosis of Gallbladder Lesions*

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New York

In some instances gallbladder lesions[1] run a typical course and can then be easily recognized. Often, however, the symptoms are far from characteristic and a correct diagnosis becomes difficult; therefore everything that tends to increase our diagnostic methods is of value. X ray examinations have come to be more and more employed in this field of medicine and the findings obtained by this means are at times of considerable import. Thus, if a distinct shadow representing a calculus or calculi is discovered in the gallbladder region, a diagnosis of cholelithiasis can frequently be made. In

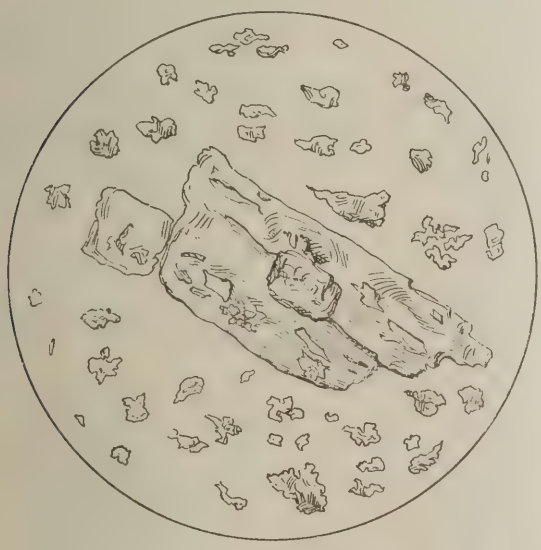

Fig. 9.—Mr. J. G. R. March 30, 1921. Bile yellow brown, very turbid; microscopically: very big and medium sized cholesterin crystals found (not operated).

addition to this direct x ray sign, there are a few indirect features pointing toward gallbladder lesion. First, sometimes after a barium meal an indentation or concavity in the duodenal cap may be found, which usually indicates the pressure point of the gallbladder over this region. Again, a dragging away of the pylorus—the first portion of the duodenum—further to the right, is probably caused by adhesions between the gallbladder and the duodenum. Defects or constant deformities of the cap may be due either to ulcerative lesions of the duodenum or to adhesions between the gallbladder and this organ.

The latest aid for obtaining a diagnosis in this field is the direct examination of the bile.

Bile is a product of the liver. When obtained from the duodenum in the fasting condition of the patient, it represents the secretion or excretion of the liver with some admixture coming from the bile ducts and gallbladder, and the pancreatic and duodenal secretions. As in the case of the urine, which no physician fails to examine in affections of the kidney, the bile should be investigated in all diseases of the liver, gallbladder, and pancreas, for it is often of the greatest assistance. In order to be of use, however, the examination should be performed with great caution.

First, the duodenal tube must be in perfect condition, clean and aseptic; the specimen of bile obtained must be subjected to examination while fresh—within half an hour or so after securing it. Normal bile, obtained in the fasting condition of the patient, is golden yellow and clear; while a pathological bile is always more or less turbid and subject to manifold variations in color. A yellow greenish peasoup appearance is a frequent occurrence in the severer affections of the gallbladder. The reason for the necessity of examining the bile very soon after obtaining it, is that it changes in color and also in character with the lapse of time.

After having observed the bile with regard to its appearance, and also after having determined its chemical character with regard to its alkalinity, a microscopic examination is made.

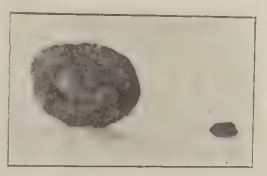

Fig. 10.—J. A. G. Duodenal ulcer and severe cholecystitis. Stone found in cystic duct at operation on October 30, 1922. The small particle to the right shows one of the many concretions which emptied from the common duct. One half times natural size. (New York Medical Journal, June 6, 1923.) The bile was turbid, containing pus corpuscles and calcium bilirubin crystals. In the duodenal contents, which were turbid, a blackish looking particle of pinhead size was found, which upon microscopic examination proved to consist principally of debris and calcium bilirubin crystals. Dr. Willy Meyer operated upon the patient. The gallbladder was not adherent, and to outward appearance it was almost normal. On palpating it the surgeon at first had difficulty in discovering anything wrong, but on further search a concretion was detected in the cystic duct, and on removing the gallbladder a solitary black stone was found in the cystic duct, while many small concretions were discovered, when the common duct was incised. When the gallbladder was opened the bile was dark and putrid.

Whenever a sediment is present, this must be separately examined. If there is no sediment, and the bile is simply turbid, after centrifuging the specimen the lowest layer may be selected for another examination. While the discovery of a few tiny cholesterin crystals here and there in the microscopic field is of no consequence, these crystals, if present in large numbers, are of significance. Occasionally pus corpuscles and bacteria are found. If the latter are present in great numbers, almost forming colonies, it is an important finding. Mucus is frequently observed. Occasionally the microscopic examination shows conglom-

*Read before the Newark Academy of Medicine, February 13, 1924, and before the Greater New York Medical Society, on April 21, 1924.

[1]In this article I take pleasure in publishing additional pictures with regard to the findings of the direct examination of the bile. Figures 1, 2, and 3, were printed in the New York Medical Journal, July 3, 1920, and Figures 4, 5, 6, 7, and 8 in the Medical Record December 10, 1921. For this reason I begin here with Figure 9.

Figures 9 to 25 are more or less characteristic for gallstones. The large size cholesterin crystals especially when lying in conglomerations (one on top of the other) are important evidences of biliary calculi. They are, however, not positive proof of the presence of a calculus. As was mentioned in one of my former papers they can occur but rarely without the presence of a stone.

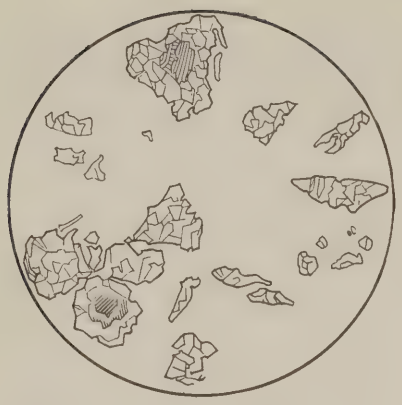

FIG. 11.—Mrs. J. F. February 19, 1923. Bile, dark brown yellow, very turbid, containing many cholesterin crystals. At operation gallbladder found filled with stones.

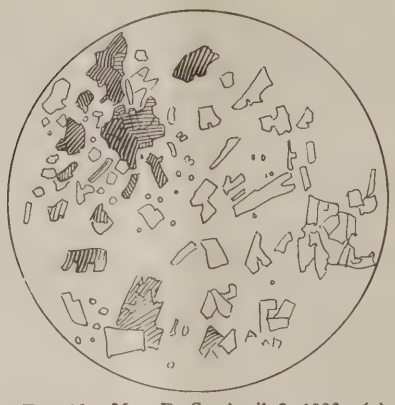

FIG. 12.—Mrs. D. S. April 2, 1923. (*a*) Bile obtained at operation very dark, almost black and turbid. Microscopically, big cholesterin and biliary salt crystals.

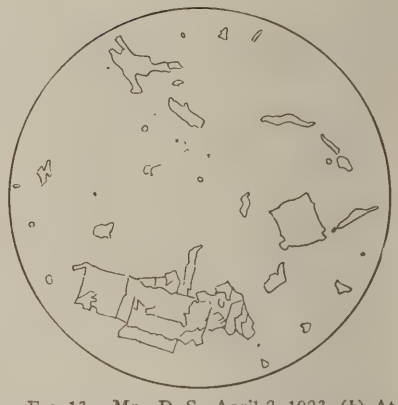

FIG. 13.—Mrs. D. S. April 2, 1923. (*b*) At the operation numerous calculi were found in the gallbladder. Numerous cholesterin crystals, similar in structure to (*a*).

FIG. 14.—Mrs. D. S. April 2, 1923. (*c*) Another scraping showed cholesterin crystals of very similar type as (*a*) and (*b*).

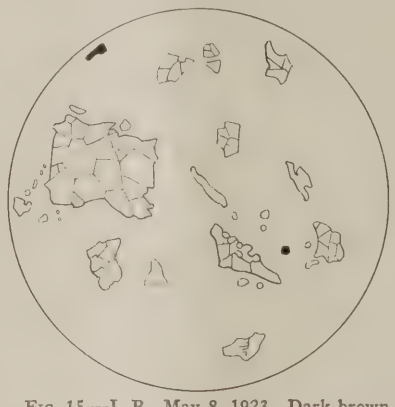

FIG. 15.—I. B. May 8, 1923. Dark brown yellow, very turbid. (*a*) Many cholesterin crystals; some in conglomerations.

FIG. 16.—I. B. May 8, 1923. (*b*) Mucus; peculiar crystals with concentric rings resembling spangolite crystals.

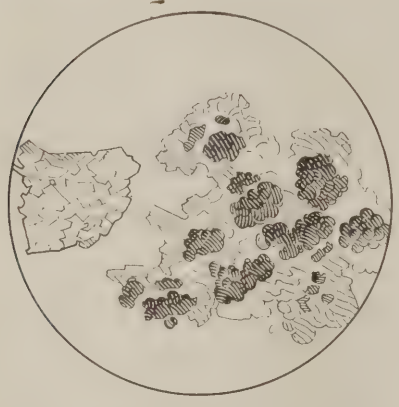

FIG. 17.—R. P. T. April 3, 1923. Bile, dark yellow, very turbid. Microscopically: mucus; cholesterin crystals; calcium bilirubin crystals.

FIG. 18.—Mr. H. R. April 25, 1923. Bile dark greenish yellow, very turbid. Microscopically: (*a*) many cholesterin and biliary salt crystals.

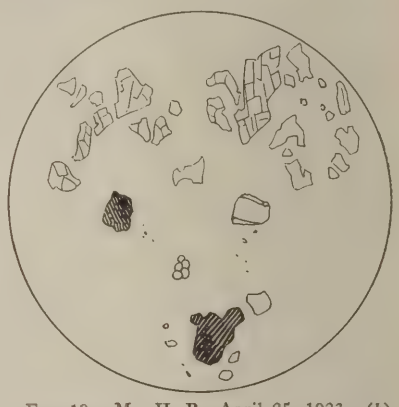

FIG. 19.—Mr. H. R. April 25, 1923. (*b*) conglomeration of cholesterin crystals; a few biliary salt crystals, mucus and pus corpuscles.

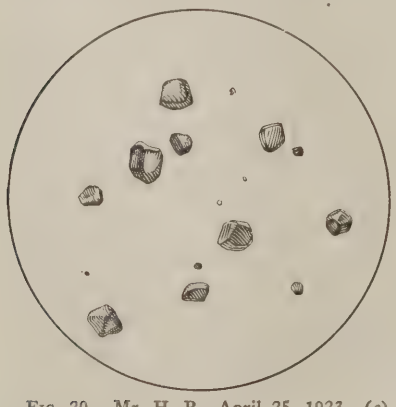

FIG. 20.—Mr. H. R. April 25, 1923. (*c*) Calcium bilirubin crystals.

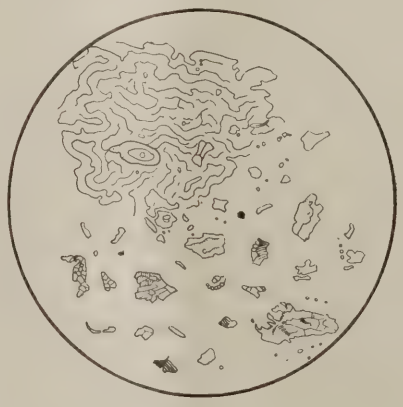

FIG. 21.—E. S. May 29, 1923. Bile, light yellow, very turbid.

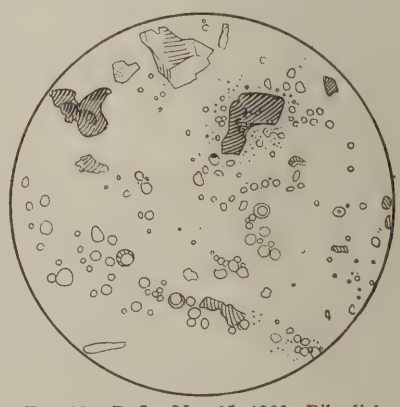

FIG. 22.—R. L. May 15, 1923. Bile, light yellow, brown and reddish tinge, very turbid.

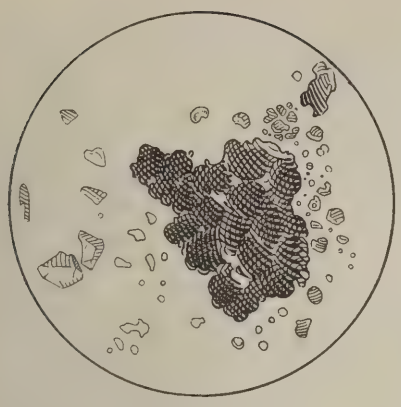

FIG. 23.—R. L. E. May 15, 1923. (*b*) Cholesterin and calcium bilirubin crystals. Patient not operated.

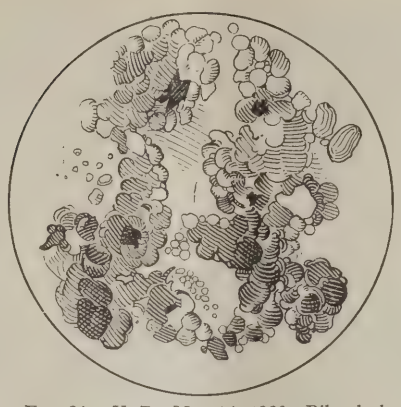

FIG. 24.—Y. R. May 15, 1923. Bile, dark yellow, turbid; mucus; calcium bilirubin crystals; pus corpuscles. Patient not operated.

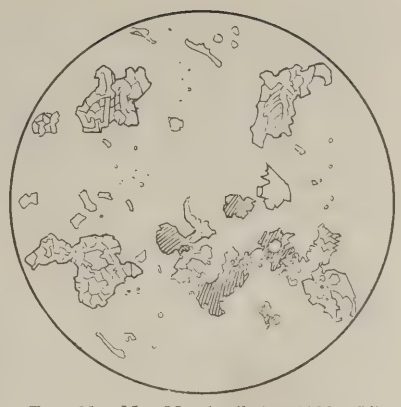

FIG. 25.—Mr. M. April 10, 1923. Bile, greenish yellow, very turbid. Mucus; pus cells; cholesterin crystals in conglomerations.

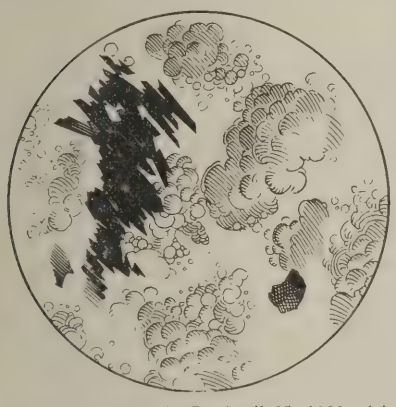

FIG. 26.—Mrs. A. S. April 25, 1923. (*a*) Bile, yellow green, turbid, small pinhead size particles, black.

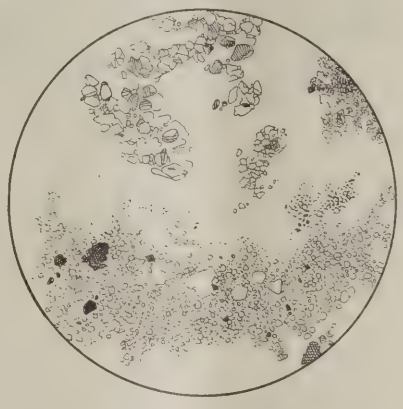

FIG. 27.—Mrs. A. S. November 9, 1923. (*b*) Bile dark brown yellow, clear. Blackish pinhead size particles.

FIG. 28.—Mrs. B. September 27, 1923. (*a*) Bile, dark yellow, greenish, very turbid; small sand like particles found.

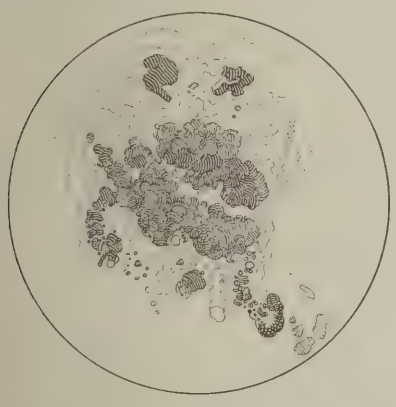

FIG. 29.—Mrs. B. October 3, 1923. (*b*) Black sandlike particles found in the opened gallbladder.

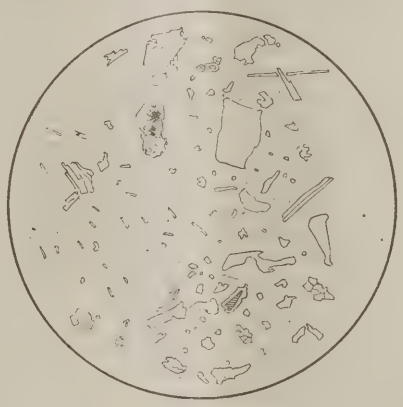

FIG. 31.—B. D. D. September 4, 1923. Bile light green yellow, turbid. Cholesterin and calcium bilirubin crystals and mucus.

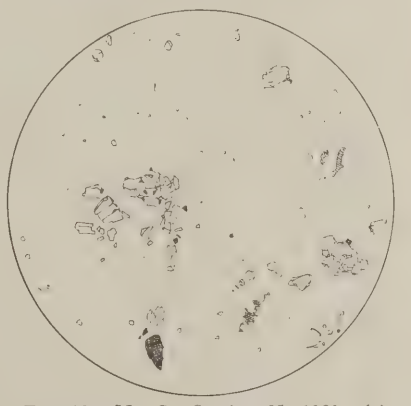

FIG. 32.—Mr. S. October 25, 1923. (*a*) Black sandlike particles found in the bile; cholesterin crystals and mucus.

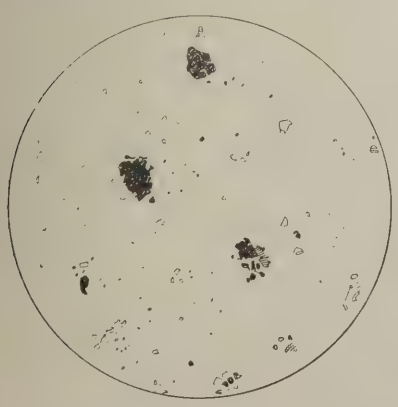

FIG. 33.—Mr. S. October 25, 1923. (*b*) Small cholesterin and black rhomboid crystals of various sizes (iron?).

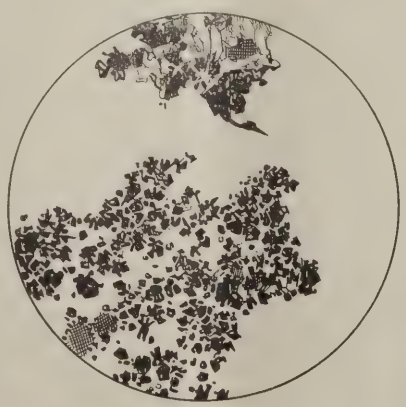

FIG. 34.—Mrs. R.—December 12, 1923. Pinhead size concretions: consisting of microscopically blackish looking crystals.

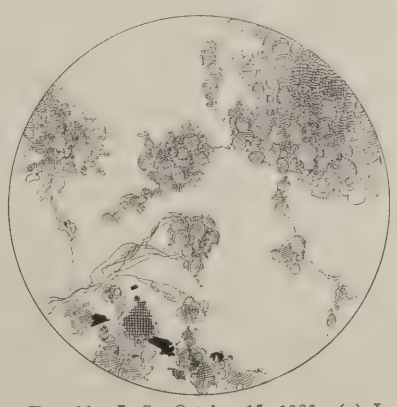

FIG. 35.—J. S. October 15, 1923. (*a*) In the bile tiny blackish concretions of pinhead size.

erations of large cholesterin crystals lying one on top of the other, which is suggestive of calculi.

In a number of instances the bile is either slightly turbid or clear or again very turbid and contains blackish or brownish or sometimes reddish particles of poppyseed size, or even smaller. These sandlike particles are at times very hard, at other times of a soft consistency. They are occasionally embedded in mucus, and at time float freely in the bile. When examined microscopically these particles are found to consist frequently of conglomerations of crystals: "bunch berry" variety, roundish crystals of bunch berry size, with a dark amber color; small black crystals of rhomboid shape, calcium bilirubin and small cholesterin crystals and a variety of other substances found in bile; bile salts and amorphous material. While these sandlike particles do not always indicate stones, they are always, I believe, signs of a pathological condition in the gallbladder.

Fig. 30.—Gallbladder of Mrs. B. October 3, 1923. (c) Outwardly no appearance of disease, but mucosa very much thickened and indurated, as though there were papillae. Three places of small ulcers(?). Black sandlike particles were found on the mucosa. The bile from the gallbladder after the operation looked dark, almost black, and contained many bacteria, cholesterin and calcium bilirubin crystals.

Some years ago Dr. Meyer and I (1) laid stress upon the necessity of a cholecystectomy even when no calculi could be palpated at a laparotomy, provided the symptoms and the previous bile examination evidenced distinct pathological findings. In a considerable number of these cases the sandlike particles mentioned are found in the bile. The following cases will illuminate this statement.

Case I.—Mrs. A. S. had been complaining of occasional migraine for a few months, and more recently of nausea accompanied by vomiting and pains in the gastric region. A detailed examination revealed the presence of an ulcer in the stomach, not far distant from the pylorus. A course of duodenal alimentation relieved her considerably of the gastric symptoms, so that she could partake of ordinary food after the treatment. During the cure of the ulcer, however, it was discovered that the patient's bile was frequently very turbid and oftentimes contained blackish sandlike particles which upon examination were found to consist of calcium bilirubin, so called bunch berry crystals, and mucus. (Figs. 26, 27).

About four months after treatment nausea and occasional vomiting reappeared. Finding the pylorus functioning well, I came to the conclusion that the gastric symptoms now were reflex in nature and were probably due to the gallbladder lesion; operation by Dr. Berg disclosed a diseased, shrunken gallbladder containing tarry looking bile, but no stones.

Another case of cholycystitis without stone is the following:

Case II.—Mrs. B., forty-eight years old, had been troubled for the past ten years with severe attacks of migraine and bilious vomiting. The vomiting would last for almost a day and then stop suddenly and the patient would be able gradually to resume her ordinary way of living. While at first these attacks came on only every few months, recently they had become more frequent, so that they appeared almost every two weeks. For the last year or two, she had not felt perfectly well between the attacks, being distressed for about an hour or two after meals, with heartburn and eructations of gas. A detailed examination of the gastrointestinal tract pointed to a duodenal ulcer and gallbladder lesion. The bile was always turbid in the fasting condition and frequently contained sandlike concretions of a blackish color. Microscopically numerous cholesterin and bunch berry crystals of amber color, pus cells, and epithelial cells were found. The patient was operated upon on October 3, 1923. Outwardly the gallbladder showed no evidence of disease but based upon the findings previously discovered in the bile in conjunction with the symptoms a cholecystectomy was performed by the surgeon in charge Dr. George Woolsey. Upon opening the gallbladder several ulcers were found on the mucosa of this organ, while the entire mucosa was greatly inflamed. Lying on the mucosa were found a few black sandlike particles which microscopically showed the same formation and variety of crystals as found in the bile at the examination previous to operation. (Figs. 28, 29, 30.)

A third case of cholecystitis without stones is the following:

Case III.—W. B., fifty-two years old, was admitted to Lenox Hill Hospital on January 2, 1924. He had had a nervous breakdown in 1919 and in March, 1919, was at the Lenox Hill Hospital for about ten days under my care for a gastric neurosis. He had been well until about three months ago when he slipped in the bathroom and fractured the left clavicle. Since that time he had been suffering from intermittent pains in the epigastrium radiating to the back with constant discomfort in this region. He did not vomit, but had a bad taste in his mouth and bad breath, and was constipated. On admission the patient's weight was 149 pounds. Red blood cells, 4,500,000; hemoglobin 85 per cent; white blood cells, 7,800. Gastric analysis: P. C., free hydrochloric acid, 25; total acid, 35; no blood. January 4, 1924, feces contained no blood. String test showed blood stain 50'-65' cm., bile stain 63' cm. to end. January 14th, red blood cells 4,270,000, hemoglobin 65 per cent, white blood cells 7,000, polymorphonuclears 67 per cent, mononuclears, 33 per cent. The urine contained no albumin; no sugar; white blood cells 3+, epithelial cells 2+. The duodenal contents were unusually clear, but contained several black sandlike particles consisting of calcium bilirubin and cholesterin crystals, also mucus. The second specimen showed numerous bacteria. January 5, 1924, the x ray examination (Dr. Stewart) showed

no lesion of stomach or duodenum. Tenderness on deep pressure over gallbladder region with fixation of bulbus. No retention after six hours with head of meal in ascending colon. The cecum was felt and found to be freely movable. The appendix was visible, not sensitive, movable. There was definite sensitiveness in the right hypochondriac region which was accentuated on deep pressure. The patient's weight was 160 pounds. The diagnosis was duodenal ulcer and cholecystitis. The patient was put on duodenal alimentation and operation advised.

(*To be concluded*)

Control of Hemophilia and Other Hemorrhagic Conditions*

Preliminary Report of a New Method Which Mechanically Reduces the Coagulation Time of the Blood

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While testing a new apparatus for blood transfusion, using the distal portion of the jugular vein of a dog as the donor and its proximal portion as the recipient, we noticed that the blood, after a while, had a tendency to clot in the two needles. The flow of blood being practically constant, evidently the clotting could not be attributed to stagnation of blood in the needles, but perhaps to the fact that with the procedure mentioned above we had decreased the coagulation time of the blood.

Realizing the great clinical importance that the reduction of the coagulation time of the blood might have in controlling hemorrhage in cases of hemophilia and other hemorrhagic conditions, with the assistance and invaluable help of my assistant, Dr. W. P. Eckes, I started experimental research immediately to determine if the coagulation time of the blood could be reduced by mechanical means.

The experiments were most successful. We were able to reduce the coagulation time from an average of eight to ten minutes to an average of one minute and a few seconds. In this preliminary note we shall not dwell on the details of our experiments, nor on the theories of coagulation. We merely wish to record the fact that by purely mechanical means we have succeeded in reducing in vitro and in living organs the coagulation time of the blood circulating in healthy animals to about one tenth of the normal.

As already mentioned, the jugular vein was exposed and severed; the distal end used as donor, the proximal as recipient. An instrument, to be described later, having two automatic gravity valves to which a two and a half c.c. syringe is attached, was used. This instrument permits continuous suction of blood from the donor's vein and introduction of this blood into the recipient's vein. By filling and emptying the syringe about six hundred times, the amount of blood passed through the syringe was about 1,500 c.c. A dog, weighing about thirty-six pounds, would have about 1,500 c.c. of blood. Therefore all the blood would have passed through the transfusion apparatus, composed of small metal tubes, rubber tubes and a two and a half c.c. syringe. The average coagulation time decreased from an average of ten minutes to the lowest average of one minute with a regular rate: that is by making four tests at different intervals the coagulation time decreased thus:

First test, before autotransfusion.....ten minutes
Second test, five minutes after autotransfusion was started .....seven minutes
Third test, five minutes later.....four minutes
Fourth test, five minutes later.....one minute

At the end of twenty minutes, the coagulation time in vivo was also most markedly decreased. Notwithstanding the fact that the animals were under the influence of ether, which favors hemorrhage, the severing of the femoral vein caused only very slight bleeding, the region becoming immediately covered with a large clot.

This latter observation is of the greatest clinical importance because it demonstrates that by shortening the coagulation time there is practically no hemorrhage from as large a bloodvessel as the femoral vein. We may, therefore, logically expect that in cases of capillary hemorrhage as occurring in hemophilia and other hemorrhagic conditions, the procedure mentioned above will cause early coagulation of the blood, stopping the hemorrhage and saving the patient's life.

The simple passage of a great amount of blood through a syringe evidently decreases the coagulation time of the blood, and while we realize that this does not mean that hemorrhagic conditions can be cured by this simple expedient it gives great hope for the treatment of these very serious conditions.

Clinically it may be advisable to add some coagulating substance to the blood of the patient while the autotransfusion is going on, previously or after. Also transfusion of whole blood while the autotransfusion is going on, previously or after, may be advisable. We are working up these different sides of the complex problems of hemorrhagic diseases and hope soon to report clinical cases.

I shall be very glad to furnish additional information to any one interested in the matter, and extend a cordial invitation to colleagues to witness the work done at the Laboratory of Surgical Research, cheerfully offering my assistance gratis in the application of this treatment to any hospital patient.

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Relation of Gallbladder Infection to Encephalitis

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The presence of epidemic encephalitis as an endemic disease, and its occasional flareup in more or less extensive epidemics, has added another to our list of diseases of unknown origin. Its importance is increased by reason of its relatively high mortality, and because of its serious sequelæ. Despite the large amount of experimentation to determine the etiology of this disease, the cause of encephalitis has not yet been found. Rosenow is of the opinion that epidemic or lethargic encephalitis is caused by a streptococcus, although this organism has not been directly cultivated from the brain tissue.

Flexner (1) in a complete résumé of all the experimental evidence published so far, concludes that only one definite example of transmission of this disease has been produced. He concludes further that the other reported positives are due to the fact that the experimental animal used, namely the rabbit, normally shows all the various findings which were reported by various observers as positive evidence of an experimental transmissibility of this disease. He concludes that the question is not yet settled. The changes which occur in the brain during the course of this disease have not been definitely determined. The pathological reports are based largely upon the very virulent cases, and on the late cases in which, no doubt, some healing and scar formation has occurred.

In view of the fact that many patients recover completely, that even after a year and a half recovery may be complete, as in Leiner's case (2), a question of doubt arises as to the pathology present in the brain tissue. It is possible, as suggested by Leiner and others, that edema may play an important part in the symptomatology of the disease. This edema may be due to a selective action of a toxin elaborated in some source of infection in the body. Among the various places in the body in which infection may be lodged, and yet be unrecognized for a long time, is the gallbladder.

I have had five cases of encephalitis associated with infection in the gallbladder or bile passages. Four of these patients were returned to normal by the surgical removal of the source of infection. The fifth patient, unfortunately, did not survive the operation, although definite pathology was found in the gallbladder. In each of the other four cases, the change in the mental and physical picture was noticed promptly within twenty-four or forty-eight hours; that is, by the time the patient was alert enough, following the recovery from anesthesia and the shock of the operation, to be carefully examined, and the mental state determined. Briefly, the cases follow:

Case I.—Miss E. G., nurse, aged twenty-six. Seen first on December 4, 1922. She complained of pain in the upper abdomen; usually came on two hours after meals; was relieved by food, but not always. Condition had existed eight months. She frequently vomited to relieve distress, but recently vomiting was worse and more marked, pain was more constant and closer to meals. The stools were clay colored; no tarry stools were noted. Her weight was stationary at 165. Had been taking a powder which gave relief for a time only.

She had had typhoid at seven; measles and diphtheria in childhood, appendix was removed five years ago, but operation did not give complete relief from symptoms.

General examination of no importance except that a slight enlargement of the liver, two finger's breadth below the costal arch, was noted; this was tender. Laboratory tests showed stools dark, of grayish black color, but no blood. Gastric analysis: no free hydrochloric acid; total acidity 23; no blood, sarcene or Oppler-Boas bacilli. Urine was negative in every way. Gastrointestinal x ray showed no changes except marked tenderness along the cecum and ascending colon, and spastic colon. Diagnosis of gallbladder disease was made, and was borne out by the surgeon's record made at the appendix operation five years previously, which showed that the gallbladder had been adherent to the stomach, had been opened, and closed after finding no stones present; also a note was made that five or six enlarged glands was present along the cystic and common ducts.

Patient entered the St. Vincent's Hospital for observation on December 20th. Shortly after entering the hospital, it was noticed that the patient's mentality was depressed; memory was poor; she was drowsy and irritable. Shooting pains in the abdomen and legs were complained of; jerking motions of the arms, legs, and fingers were noted, and patient complained of jerking of the abdominal muscles. The abdominal reflex on the right disappeared, and the left knee jerk could not be obtained.

On the 25th the patient complained of diplopia and distortion of objects, and the white uniform of the nurse appeared black. On one occasion, she saw only the upper half of my body as I entered the room. Delirium appeared at midnight, and for two or three nights in succession, patient fought with her nurse to come to my office to keep an appointment which she declared had been made.

Spinal puncture revealed fluid under slight pressure. Examination showed no globulin, Wassermann was negative, gold chloride negative, cell count eleven.

Patient's condition improved for two or three days, and then she became worse, and another spinal drainage was done. Vomiting now became persistent and severe, and always contained bile. The upper right rectus became rigid, and tenderness increased. The white blood count was 8,200. Because of the definite gallbladder picture and the persistent vomiting which made it impossible to nourish the patient, it was decided that surgery was indicated, regardless of the encephalitis. This was done January 2, 1923, by Dr. Fred. Douglass. A markedly thickened gallbladder, buried in a mass of adhesions, was found and removed. No other pathology was noticed. The re-

covery from the encephalitis was prompt and complete.

On questioning the classmates of this nurse, it was found that changes in her character, disposition, and mentality had been noticed by them as far back as February of that year.

Case II.—Mr. B. F. L., merchant, aged forty-one, This patient has been under my care since 1915, at which time he had repeated attacks of tonsillitis. He had, at this time, a moderately extensive psoriasis, which had existed over ten years, and for which treatment had been given by a number of prominent dermatologists. The tonsils were so troublesome that removal was advised, and done in April, 1915, by Dr. A. L. Steinfeld. I was very much surprised to note that within a few days the psoriasis began to disappear, and within a week was gone. In February, 1920, patient reported again because of a return of the psoriasis, which had just appeared for the first time since tonsil operation. He had, also, a very severe neuralgia, extending out from the region of the sixth dorsal vertebra along the left to the front. He complained of nausea, marked epigastric distress, and constipation. The stools were clay colored and the tongue was coated.

Nonsurgical biliary drainage was undertaken. The B bile was green and thick, containing much mucus, very little pus, but long chains of cocci were seen under the microscope. Both the psoriasis and the neuritis were improved, and a course of five drainages was given, with complete relief from both these conditions.

The present illness began early in July, 1923. Patient noticed a slight pain and discomfort in the left buttock, extending down the thigh and leg, but paid little attention to it, attributing the pain to his physical activity, until about the 18th of August, when he came to the office for relief.

The pain was definitely along the course of the sciatic nerve; did not involve the hip joint. There was already a difference in the measurements of the left leg, as compared to the right. The tendo Achilles reflex was absent, and there was marked tenderness around the head of the fibula. Patient complained, also, of a sense of a lump in the epigastrium, a mild nausea on arising in the morning; had lost about ten pounds in weight during the last six weeks.

General examination revealed nose, throat and teeth in excellent condition; heart and lungs normal. Abdomen showed a marked tenderness over the ninth right costal border. The entire right rectus was rigid; Murphy's percussion over the costal border produced epigastric pain. The spleen was not enlarged, abdomen negative otherwise. Rectal examination revealed a slightly thickened nodular prostate. Smear was negative for gonococci. Red cell count was 5,000,000; hemoglobin 90 per cent. white cells, 6,500. Urine showed a trace of sugar, no albumin, no casts, indican a trace, and ferric chloride one plus. X ray of the teeth showed no root abscesses. Blood sugar taken at this time, two hours after the noon meal, was .172 per cent; later, after fourteen hours fast, it was .113 per cent. Blood urea, 20 mgs. per 100 c. c.

The absence of any other source of infection, and knowledge of his past biliary tract involvement and present gastric distress, again seemed to point to the biliary tract as the source of infection. The prostate, however, was given a thorough course of treatment, with no improvement in the sciatica. Nonsurgical biliary drainage was again attempted, and on four successive occasions, only A bile and a very small quantity of C bile was obtained; no B bile at any time. Patient did not respond to the treatment, and because of failure to obtain B bile, he was advised to enter the hospital and to consider surgery.

Patient was then lost sight of for about three weeks. He was seen again on the 9th of October, and it was learned that he had become progressively worse. The pain was intense, and he felt miserable in general. He had lost considerable weight since last seen; skin was definitely subicteric. No examination was made at this time, as I was leaving the city for a day or so.

On the night of the 10th, on my return to the city, I saw patient about eight o'clock, and found a very marked change in his condition. There was a definite mask expression; patient was emotional; euphoria present; had had diplopia all day. His mother stated that he had used rather strong language during the day, something which he had never previously done in her presence. The tongue was coated; marked tremor was noted. The pupils showed nothing unusual. The liver was now palpable, about two finger's breadth below the costal arch; slightly tender. The abdominal reflexes on the left side were absent, on the right were diminished. Right knee-jerk exaggerated, left diminished. Patient was drowsy, slept most of the time, but could be readily awakened.

The picture was definitely that of encephalitis; and having in mind the two previous cases, together with the fact that the gallbladder was known to be infected, I advised surgery in the hope that removal of the infected gallbladder would relieve the encephalitis. Patient was taken to the hospital and prepared for operation.

By morning, the drowsiness had increased and a bilateral ptosis was present. The operation was done by Fred. Douglass, and a greatly enlarged, distended, and what appeared to be a constricted gallbladder was removed.

On opening the gallbladder, over two ounces of thick, viscid, mucilaginous bile was removed, green in color; and six or seven very small, apparently freshly formed stones, each about the size of the head of a small pin were found. These concretions were all glued together in one mass by the viscid bile, and probably formed the obstruction which prevented the gallbladder bile from emptying. After the gallbladder collapsed, it was seen that the apparent bilobed condition was really due to a diverticulum, extending from the base of the gallbladder, which, when distended, was fully as large as the gallbladder itself. The appendix was found bent sharply at a right angle with itself, and together with the caecum was adherent to the pelvis. The appendix was removed with difficulty. Culture of the bile from gallbladder was sterile.

Patient made an excellent recovery, and the morning after the operation showed just a slight euphoria. This soon disappeared, and no other signs of the encephalitis remain. Recovery was complete. Pa-

tient, however, had no recollection of the twenty-four hours prior to the operation, nor of going up to the operating room.

A few days after the operation, in talking over his illness, he stated that he probably was sicker than he realized; because for six or seven months previously, he had had no energy, he had been steadily losing in weight, he had been forcing himself to do his usual routine work, and although he had spent the entire summer at his cottage by the lake, he had gone in bathing only twice, and normally he was very fond of the water. He had not got the pleasure from his vacation that he usually did, and realized, when looking back on this period, that things did not appear quite normal, but that he had not fully realized that anything was wrong.

This is a very small list[1] from which to draw conclusions concerning such a widespread condition as encephalitis.

The importance of negative cultures from the gallbladder must not be overemphasized. No special technic was used, and no anaerobic cultures were made; the laboratory taking merely a stab culture.

It is well to call attention to the fact that in all of these cases where an accurate history can be obtained, the patient is aware that he has been ill, and mentally below par or abnormal, for a much longer period of time than at first appeared to be the case. This period of prolonged onset of encephalitis sometimes extends back seven or eight months or a year.

We must again recall here the fact that the virus of this disease has not yet been isolated. It has not been definitely shown that the virus is present in the brain tissues; bacteria have not been shown to be present in the nerve tissues. Considering this, together with the gradual onset of the disease, it does not seem illogical to assume the presence of the virus in some part of the body, other than the brain itself, from which point the toxins find their way to the nerve tissues, and by their selective action produce the changes which are characteristic of encephalitis. Should it be shown that a microorganism is the causative factor, and should this be isolated from the brain tissue, it need not conflict with the statement made above; for the microorganism might readily find its way from one focus of infection in the body to another, as occurs in the production of myositis, following cases of tonsillitis. Many other illustrations are known to all clinicians.

In connection with the part played by the gallbladder in these cases of encephalitis, I believe it is of real importance to appreciate and perhaps to give further study to an epidemic which has been prevalent in the past year, at least in this section of the country.

I have seen a number of cases, particularly in children, with fever ranging from 102° to 104°; headache; coated tongue; indefinite abdominal pain; leg pains; and rarely, epistaxis. There was occasional vomiting. Nearly always the upper right quadrant of the abdomen was rigid, and always tender. The stools, on the second or third day, began to vary from light yellow, to clay color. Not infrequently, two or more children in the same house would come down with the same infection within a few days of one another, and occasionally an adult in the house would show the same symptoms. The severity of the disease varied considerably; the fever lasted usually from two or four days, occasionally longer. However, no jaundice was observed in any of the cases, but many of these youngsters had a very slow convalescence, and it was weeks and occasionally months, before they were again perfectly normal.

Unfortunately, because of the mildness of the infection, and because all of these patients were seen in the home, blood studies were not made, nor was it possible to attempt isolation of the spirochete associated with acute infectious jaundice which the cases resembled.

I am sure that all physicians in general practice have noted the increasing number of gallbladder infections prevailing during the past few years. In my own work, I have seen at least five cases of acute gallbladder infection to one of acute appendicitis; chronic and subacute gallbladder conditions also numerous. This has been the experience of a number of surgeons to whom I have spoken on this subject.

That all cases of encephalitis are associated with gallbladder infection need not follow. As an illustration of this, I might state an earlier experience. Early in April of 1918, I saw a man of thirty, a bartender, taken sick with severe, unbearable shooting pains in the left side of his face. In severity and distribution the pain suggested tic douloureux. This persisted for nearly a week. Patient then began to run a temperature, running from 99° to 101°; complained of terrific headaches; became drowsy, and, at times, stuporous. A slight rigidity developed in the left arm and leg; twitching of the muscles of the face; finally, within a day or so, severe generalized convulsions occurred, becoming very numerous up to thirty a day. Some beginning changes were noted in the eyegrounds, suggesting a beginning choked disc, and patient went into a state of stupor from which he could scarcely be aroused.

Diagnosis of brain abscess was made and was confirmed by Louis Miller. The abscess was considered to be in the Rolandic area on the right side, and a decompression operation was done by Homer Heath. No abscess was found, but the entire exposed area of the brain showed intense vascular engorgement, and a few minute hemorrhagic spots were seen. The picture resembled that of an encephalitis. The possibility of encephalitis, secondary to marked dental infection was considered, and twenty infected teeth were withdrawn two days later. From this time on, the patient had only four or five convulsions. Improvement was rapid; patient made a complete recovery, and was out of the hospital within two weeks. Was last heard from in 1921, when he considered himself in perfect health, and had gained over twenty pounds in weight.[2]

Peter Bassoe, in his discussion of Hunt's paper on encephalitis, (3), says in part: "We must assume that the virus may lie dormant in the brain as the

[1]Three additional cases have been omitted due to lack of space. Since submitting this paper for publication another severe case was seen. Removal of gallbladder resulted in prompt recovery.

[2]This case is very briefly reported, because it was reported by Dr. Heath in a paper read at Lima, Ohio, before the Tri-State Medical Association. Still unpublished.

spirochete in syphilis does before it produces general paralysis; or possibly the virus may remain in another part of the body, for instance in the liver or some other internal organ, until some condition mobilizes it, so to speak, so that it again gets an opportunity to show its affinity for the brain."

I believe that this suggestion is a logical one, and worthy of serious consideration. There may be some association between these various obscure fevers which have been present ever since the influenza epidemic began, and the localization of this virus in some organ of the body from which it finds its way to the brain, producing an encephalitis. I believe that the subject of encephalitis deserves further study from this angle.

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Hypertrophic Pyloric Stenosis in an Infant

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Case.—A female infant, eleven weeks old, the second child of healthy parents. The family history was of no importance. Mother gave no history of miscarriages. The patient was born at full term, spontaneous delivery, birth weight about seven pounds, present weight five pounds and nine ounces.

The child was breast fed up to four weeks of age when it was weaned upon the advice of a physician, for its constant vomiting. The vomiting, however, continued even after the baby was put on a formula; it was projectile in character, occurred soon after feeding, and was accompanied by a good deal of restlessness and crying. The appetite was good, stools two to three a day, very small and yellowish. Failure of the child to gain in weight was responsible for frequent changes in the feeding formula.

Examination showed the following: A female child, much undernourished, scalp covered with a thick scaly eczema, eyes sunken, mouth dry, tongue reddish and raw looking, lips dry, cheeks sunken, chin pointed, ears prominent and protruding, ribs prominent, respirations regular, cardiac apex impulse visible in the fifth interspace and left nipple line. The lungs were negative. The abdomen was rounded, somewhat distended and tympanitic.

Soon after a feeding was given, peristaltic waves could easily be seen passing from left to right, in the region of the stomach. These waves would subside as soon as the baby vomited up the greater part of its feeding. The vomiting was projectile in character. No tumor mass could be made out by palpation over the abdomen.

The infant was admitted to my service at the East New York Hospital with a diagnosis of pyloric stenosis. An x ray examination made by Dr. L. Rein showed the following: The first exposure taken soon after a feeding, showed the stomach full with no food having gone through the pylorus into the small intestines. At the end of three hours, following a barium sulphate feeding, the stomach was three quarters full and only little food had trickled through the pylorus. At the end of four hours, the stomach was still half full with only very little more shadows over the intestinal field. At the end of six hours there was still a residue of one third of the meal in the stomach. On each plate, the stomach presented an hourglass appearance.

The diagnosis of hypertrophic stenosis of the pylorus was corroborated. Owing to the extreme emaciation and great loss of weight, the infant weighed only five and a half pounds, and the rather definite symptoms, immediate operation was decided upon without further experimenting with drugs, thick farina feeding or passing a duodenal catheter (1).

Dr. A. Lightstone performed a Remmstedt operation under oxygen-ether anesthesia. A hard cartilaginous tumor of the pylorus was found which was incised down to the submucosa, and the abdominal wound closed.

Two hours after the operation the child was given its first feeding. The reaction following the operation was mild; the temperature going up to 104° F. which remained up for twenty-four hours. Two hypodermoclyses of normal saline administered the day following the operation brought the temperature promptly down to normal. The child then took its food well, spitting up a small amount once or twice a day.

The child was weighed on the seventh day following the operation, and it showed a gain of seven and a quarter ounces. On the ninth day after the operation, the baby was taking a two and a half ounce milk formula and retained it. Did not vomit, had two to three yellow, soft stools daily, appeared well, rested comfortably and gained eleven ounces since the day of operation. This was the first time this child had gained weight since it was born. No atropine or any drug was given to the baby at any time since it came under our care.

Examination of the patient on the day of discharge from the hospital, two weeks after operation, showed a gain of 19.5 ounces since the day of operation. The child took its food and cried soon after the bottle was emptied. There was no vomiting and the bowels moved two to three times a day, the stool was yellowish and pasty. The child slept comfortably. The wound healed and the general condition was satisfactory.

Fig. 1.—Baby F. Three hour picture. August 20, 1922.

REMARKS.

The management of this condition is still open to discussion inasmuch as there seems to be a considerable difference of opinion as to the actual existing pathology. As long as the profession will adhere to the theory of spasmophilia in all cases presenting persistent vomiting, until the patient is in such a state of starvation that the risk of operation becomes extreme, it naturally follows that the operative treatment will not gain many followers. It goes without saying that when the child first begins to vomit, atropine or lavage is the proper routine. However, weaning a baby for the simple reason that it vomits, is, to say the least, using poor judgment. It is important to emphasize the fact upon the practitioner that there is a difference between a child's spitting up part of its food, and progressive and forcible vomiting of the greater part of each feeding, attended with progressive loss of weight and emaciation.

While every case of true pyloric spasm presents visible peristalsis, a palpable tumor, however, is felt rarely and even in the same case, it can only be made out after the patient is fairly well dried up as a result of prolonged starvation, and therefore it is dangerous to wait until such a time when a tumor can be felt. The best way to elicit visible peristalsis is to give the baby its food and then with the patient on the table in front of a good light carefully observe the wormlike movements through the abdominal wall.

Fig. 2.—Same case. Four hour picture.

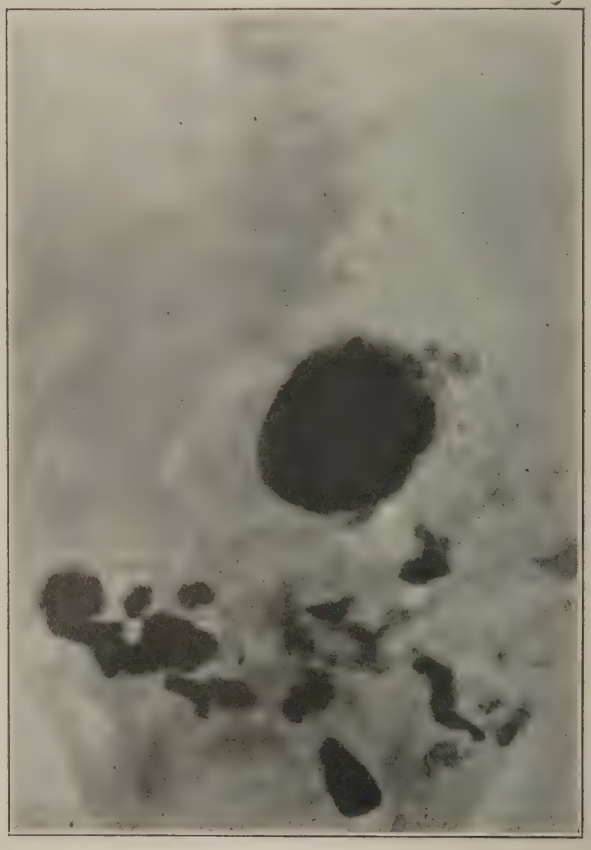

Fig. 3.—Same case. Six hour picture.

REVIEW OF SOME OF THE LITERATURE ON THIS SUBJECT.

Dr. Wollstein (2) reports a study of twenty-five cases of hypertrophic stenosis of the pylorus that came to autopsy. She cites the pathology to be a hyperplasia of the unstriped muscle fibres of the circular coat of the stomach. There was no connective tissue increase. Those patients of the group which had been operated upon and a gastroenterostomy was

performed, usually died as a result of failure to cure the pyloric lesion.

The Remmstedt operation does effect a cure of the pylorus. The incised muscle wound fills up with connective tissue, which process is usually complete within nine days.

Ernberg and Hamilton of Stockholm (3) have treated medically fifty-seven cases in ten years with a mortality of only three and one half per cent. They find in their series of cases that lavage nor drugs have in any way influenced the results. They conclude from their observations that most of the cases will come to a spontaneous recovery if we could only keep the patients up long enough by the administration of a sufficient quantity of fluids by way of hypodermoclysis.

Wall (4) says, "A strong belief in the spasmodic theory would tend to jeopardize the life of an infant through delay, incident to medical treatment.

Rachford (5) states that early operation is indicated in clearly defined cases that do not yield readily to medical treatment.

Professor Schick of Vienna (from a personal interview) entertains a conservative view on this subject. He believes entirely in the condition being a neurotic tendency on the part of the child and for that reason he advises against any operative interference and only resorts to operation as a last remedy. The results on cases operated when extremely emaciated, are naturally not encouraging.

Morgan (6) reports fifty cases of pyloric stenosis that have been treated at the Babies' Hospital in which the following points are worth noticing. Namely: The average duration of illness preceding operation was seven weeks. The average weight of these fifty cases the day of operation was six pounds three ounces. Twenty cases showed a loss in weight, postoperative, ranging between three and five ounces.

In fifty per cent. of the children upon which a gastroenterostomy was performed, there developed a severe diarrhea. Their mortality was twenty-eight per cent.

RÉSUMÉ.

1. Make the diagnosis as early as possible.
2. Do not condemn the mother's breast milk where the fault may be with the mechanism of the baby's digestive organs.
3. Resort to antispasmodics or lavage as early as possible; but discard them after one week's trial has given no results.
4. Give the child the benefit of surgical relief while its health is still in fair condition.
5. When operation is decided upon let it be a Remmstedt operation and not too much surgery.
6. Commence feeding as soon as the infant has recovered from the anesthetic, and increase the quantity of the food as the baby's food tolerance increases.
7. A conscientious and experienced nurse is one of the factors that will count towards the result of the treatment.

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The Wanderlust Impulse

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Wandering is a perpetual holiday in the great scheme of nature. By a mysterious intelligence the wandering red corpuscle masters the life of a cell. In the air the migration of birds is also a notable form of wandering for a purpose. The sea is full of wanderers. Prehistoric man was a wanderer when he lived in trees, but in the cave and cliff dwelling ages his wanderings must have been circumscribed. If modern man originated in central Asia, as some ethnologists believe, it is only by a succession of wanderings that the earth has been peopled. The Romans wandered around the known world sword in hand and founded a mighty empire. Columbus wandered across the Atlantic and discovered a new world. The Pilgrims wandered thither and founded New England. An endless succession of hardy pioneers wandered westward and made America one of the foremost of modern nations. The Phoenicians wandered in their ships in quest of commercial gain. Pizarro and Cortez and many another unscrupulous navigator sought the "treasures of the mine." The Crusaders wandered to Palestine to wrest the Holy Sepulchre from the Saracens. The intrepid young man finds the lure of the frozen North with a dog and sledge irresistible, while the more languid temperament seeks a paradise on some South Sea Isle. The lure of gold enticed thousands of wanderers to Australia, to California, to Alaska, and it is the same glittering lure that animates that typical lifelong wanderer, the mineral prospector. The love of souls moves the missionary to wander, like Livingston, through heathendom. The desire for knowledge leads scientific explorers and even romantic writers to the remotest corners of the earth. Hunters of big game, singers, actors, commercial travelers, are all regular or occasional wanderers in quest of sport or fame or money. The gypsies and the nomads of Arabia are typical wanderers. The adventurous vagabond inherits a mania for gypsy life, just as the bandit is

born with the longing to hunt human game, and in the great field of misdirected ambition, we observe that even the "holier than thou" hypocrite often has a congenital lust for some sly, subterranean life.

The human race since the dawn of history has vibrated between the two extremes of *wanderlust,* an overwhelming desire *to go,* and *bleibenlust,* an equally strong desire *to stay.* Of two brothers born in the same valley one may be perfectly content to spend his whole life there and the other may be consumed by a restless desire to see the world that lies beyond the horizon rim. In the peasant class of humanity this stay-at-home disposition is generally prevalent, and only some great misfortune, like war or famine, is likely to set them adrift. While wanderlust is a true impulse, the expression of a longing for the "land of freedom" by those who suffer squalid, miserable and unbearable home conditions must be viewed with a feeling of pity. The selfsupporting wanderer, with some worthy or at least harmless purpose in view, may be tolerated or approved or even admired. On the other hand, the genuine wanderlust inspires a young man, or very often a mere boy, to abandon all the comforts of home for the pleasure of roaming around the world, "strange countries for to see." He is not in quest of anything intrinsically desirable, and never asks himself for what purpose he leaves the worn paths of ordinary life.

Many years ago, Moody and Sankey and other successful revivalists often used a song with the touching refrain: "Where is my wandering boy tonight?" They of course intended it for the great mass of mothers, and well they knew the emotional effect it would produce, so countless was the caravan of roving sons who had never returned home. Out of the commonplace thousands who pass unnoticed there emerges a leader, The Beloved Vagabond, a very familiar hero of human interest on the legitimate stage, on the movie screen and in the popular novel. Although in reality a worthless and lawless scamp, many tales of romantic adventure are told of him and the admiring, sympathetic crowd, with a secret longing for adventure, action and an easy life, seldom pauses to wonder why it glorifies this parasite who persistently avoids labor and cherishes the brainless theory that the world owes him a living. The habitual tramp even believes his life to be an ideal one and is really proud of it. He resents the restraint of organized society and to him the law of the land is a persecution to be evaded.

This illogical creed is idealized by higher types of sentimental wanderers, such as Walt Whitman, who represents the gypsy trail as a land of sunshine. Such independence without progress is typical of many cranks, who, sooner or later, exhibit mental tendencies which mark them as psychopathic, epileptic, dementia precox, or manic depressive victims. This philosophy is best interpreted by the hobo (1) himself:

> "The hobo is a pioneer. Call him a throwback if you wish, but in a society that is becoming feminized, under luxury known in ancient days to be woman's, man becomes soft, flabby, slow of brain and slow of body.
>
> "Not so the hobo. He seeks the unknown. In him the restlessness of life speaks more loudly and responds to cosmic calls. The road beckons, the mountains call, the sea murmurs and the brain pleads, 'Let me know. Let me learn the way of all things.'
>
> "The greatest thinkers have been men who had leisure and time to observe—to ponder—not the wage slave, stunted and crippled physically and spiritually.
>
> "You could go back to Socrates, further to Moses, to Christ, down to Jack London and Gorky. 'To live, not to vegetate; to think, not to exist; to dream, not to wither and decay,' for as Harry Kemp, the poet, puts it, 'At best a dream is all that we get.'"

The simple fact that we are ingrained with emotions and that they tend to overbalance the intellect explains why a vagabond who lacks the power of selfrestraint finds it impossible to socialize himself to meet the demands of decent society and thus promenades unashamed on the public highway. The instinctive contempt for culture and social conventions, the lust of the body for bohemianism, the inability to conform to a strain, the wayward impulse misdirecting a great deal of energy are the signs which measure the limited value of such a personality. In this gallery of shiftless renegades are included the seasoned tramp, the millionaire hobo, the lawless gypsy, the hospital rounder, the race track tout, the circus follower, the soldier of fortune, truant, rogue, peddler, beggar, vampire, continental swindler, daredevil and black sheep. They all belong to the same group, but are of a different shading with regard to character. Their interpretations of the principle of life differ and they therefore take the open road in different directions.

Many tourists, commercial salesmen, missionaries, journeymen, professional men, artists and explorers reveal an unsettled feeling, a driving force, which compels them to move on to new fields, and their power of adapting themselves to circumstances and conditions, as we all know, is truly remarkable. Although the vagabond contributes nothing of value to the world, he derives the same pleasure from his wanderings. This habit of shifting about gratifies the natural inclination called lust, and serves as an outlet for unstable emotions. To settle down would be a cruel restraint for such wanderers because the periods of unrest always create an impulse to be "on the go"; their restless conduct is very similar to that of the addict who has not taken his regular dose of morphine, but others fail to see a logical motive for the departure.

Referring to Kraepelin's (2) description of the fundamental states of the manic temperament, one can readily understand this wanderer's impulse to an inner overactivity or constitutional excitement, the symptoms of which indicate a slight hypomanic condition:

> "In the conduct and the activities of the patients a certain unsteadiness and restlessness appear before everything. They are accessible, communicative, adapt themselves readily to new conditions, but soon they again long for change and variety.
>
> "Already at school they are insubordinate

and disorderly, ringleaders in all disturbances of the peace; they play truant, run away, do not get on anywhere, have to change their school, fail in examinations, because of their aversion to thorough and persevering study.

"The aimlessness of their procedure is sometimes very peculiar; it distinctly shows how little the inner pressure of activity is guided by sensible deliberation."

Not infrequently such cases assume a depressive phase for weeks or months, and during such a mood do not travel. The wander impulse in the manic depressive is a sudden rush of nervous energy of which mobility is a dominating symptom. The actions and thoughts during this mild manic flare up are cleverly rationalized by the individual and when in the quiescent period which invariably follows, he realizes that he was ill and suffered undue restlessness. His true lust to travel is probably an unconscious effort to flee from his mental tangles.

During times of unemployment certain types, through idleness, become introspective and lazy and soon show a disinclination to lift themselves out of their destitution. They later drift about, become drunkards, steal, beg and deteriorate. The habitual loafer or bum is perhaps the greatest menace to a community, lacking fundamentally in character and devoid of all selfrespect, standing about apathetically, spineless and lazy, slipping through life with the least possible friction. Such creatures are easy subjects for the grasp of the law and are often mistaken for the ruffians (psychopaths, defectives, manics) who deliberately look for brawls. As Kraepelin and others consider that a well marked manic or cyclothymic predisposition rarely leads to dementia precox one can hardly fail to relegate the above group to the dementia precox classification, in view of the deterioration which ultimately results. William H. Davies, a genuine tramp and beggar with literary talent, wrote with rare appreciation of his weakness: "Certainly I have led a worthless, wandering and lazy life, with, in my early days, a strong dislike to continued labor, and *incapacitated from the same in later years.*" White (3) remarks on the *simple* type of dementia precox:

"A study of this class of cases shows quite frequently that the patient's resort to a hobo type of existence has been the result of his inability to adapt himself to the ordinarily complex conditions of social life, in other words, that he has slipped from under all responsibilities and all conditions which involved continuity of effort and industry. He goes from one position to another, unable to fulfill even the simpler duties because of his lack of continuity and interest."

In the paranoic type of vagabond the majority are everlastingly driven by persecuting voices and delusions, and attempt to find some avenue of escape from this product of their own imaginations. In the catatonic form, confused wandering occurs during the appearance of excitement which often is alternated by the phases of catatonic stupor and catalepsy at which time they are picked up in the streets, as is noted almost daily in newspaper dispatches. The hebephrenic type wanders because he is a buffer to any social environment and the instinct to avoid the broadside of a difficulty causes him to detour automatically from place to place. Such cases seldom choose a given destination; what they see is of no particular interest to them, and, owing to their progressive deterioration they are sooner or later sent to state institutions.

The man who has been wandering over the globe for a definite purpose is always glad to return to his homeland while the butterfly psychopath who spends his whole life in senseless wandering is seldom attacked with a fit of homesickness, owing to the lack of a certain moral sense. Although this desire to roam is a natural impulse in every heart, society puts a ban upon it. The average man does not express discontent over being compelled to remain at home for fear of being regarded as unstable or dissatisfied with life. He faces the unpleasant things in everyday existence, while the vagabond with a pathological personality runs away from difficulties. The latter changes his scenic environment so often, not because he is in search of the beauties of nature or for educational purposes as he would have us believe, but as an instinctive means of selfpreservation, which prompts him to flee from his home surroundings to foreign regions where he can remain unmolested. Knowing that he is temperamentally not constituted to withstand the tedium of associations very long, it is a hardship for him to sustain a normal mental, physical and moral balance. The beggar-tramp of the psychopathic group is difficult for uplifters and penologists to analyze because he himself is a very clever psychologist. He will try to rationalize his unstable acts and give a motive for his disordered conduct. While psychopathic vagabonds differ in mental endowment, some types measure considerably over the average intellect, such as the professional criminal of the metropolis who follows his vocation by choice and never will reform for the simple reason that he is morally unfit and unable to realize the evil of his particular weakness.

Temporary states of nomadism (4) are familiar in senile dementia, epileptic confusion, hysterical fugues and acute alcoholic psychoses. In the early stages of general paresis, the subject is often prompted to wander by some insane motive. In fact the moron is almost always compelled to travel because he is a harassed social misfit.

Abnormal wandering is a poison which debilitates humanity, for without moral health there can be no physical culture. The cinema is an influence upon any individual with a wayward imagination, and the Nick Carter style of story is responsible for the wrecking of many young lives, by implanting injurious suggestions in the immature receptive mind. The susceptibility of these young men to such evil influences can be controlled by explaining to them the pathology of their actions, so that when they are aware of an approach of restlessness they can immediately curb the impulse to wander and turn their energy in a healthy direction. Vagabondage has developed into a national institution in America because a police and hospital system of managing the conduct of the tramp is quite impossible. This is due to the vast acreage of our country. But the

possibility of corralling this parasite was made known in the Great War when a mass attack by the people caused him to be brought in to fight and work. During that period, an inconceivable amount of human energy which would have otherwise been wasted was appropriated to a useful purpose.

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Granville Stanley Hall, 1846-1924

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It is probably safe to say that no single person has influenced both educational and psychological opinion and development in the United States during the past fifty years to the same extent as G. Stanley Hall. This he did partly by his marvelous capacity to assimilate an encyclopedic range of information, partly by his great industry in writing and speaking, and partly by his unusual capacity to inspire an interest in research in others. During a full half century he was without doubt the most consistent reader in America, if not in the world, of the voluminous educational and psychological literature of all countries. Finding his early inspiration in Germany in the middle and late '70's he became the first physiological psychologist of note in this country. At Johns Hopkins he founded the first American laboratory in experimental psychology and later, as organizer and president of Clark University, he made of that institution the training ground for a large number of embryonic psychologists who have since become outstanding promoters of psychological research and a powerful influence in the reorganization of educational thought and practice throughout this country. His influence in these fields was enormously increased by his lectures, his contributions to various periodicals, popular and scientific, and his books. Especially noteworthy was his establishment in 1887, mainly out of his own funds, of *The American Journal of Psychology,* the first American journal devoted exclusively to this science. This was followed in 1891 by *The Pedagogical Seminary,* the oldest American educational quarterly, which, largely through the indefatigable labors of Professor William H. Burnham, has ever since given a summary of international educational literature besides publishing a vast number of original investigations. President Hall was also responsible for the establishment and maintenance for a number of years by Clark University of *The Journal of Religious Psychology* and *The Journal of Race Development* (later called *The Journal of International Relations*). While the main editorial work on these journals was done by his colleagues of the Clark faculty, their original conception and impetus was due to him and to them he contributed more or less frequently. A list of his writings prepared ten years ago included 328 titles, while during this last decade he published his *Senescence,* and his autobiography.

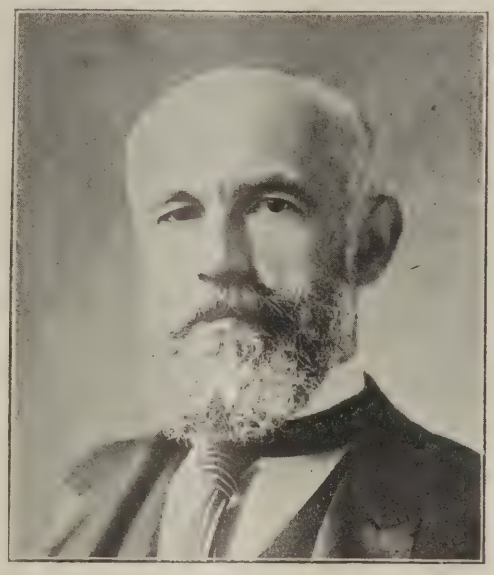
In these journals is reflected not only the extraordinarily wide scope of his intellectual interests but his capacity to find fresh trails for intellectual inquiry. Nothing is more remarkable about his long career than his capacity to maintain his mental freshness, the spirit of intellectual adventure, and youthful keenness for the pursuit of knowledge along new lines. His primary interests moved from philosophy to evolution and physiological psychology, then to child study and adolescent psychology; later he turned to psychoanalysis, religious psychology, senescence, and the feelings, emotions and sentiments. Scattered all along the line were numerous articles on a great variety of psychological and educational problems. It was a fundamental article in the faith he lived by that there was vastly more to be known than has thus far been discovered, that the sciences are still in their infancy and hold out for the exploring mind greater glories and for an expectant humanity greater hopes of deliverance than all the past has revealed or accomplished. Like an early contemporary, William T. Harris, former United States Commissioner of Education, he knew and admired Hegelian philosophy, but unlike him he never committed himself so thoroughly to the ponderous and sterile speculations of metaphysics as to lose his rapport with the ever new and developing world of thought. Gifted with capacity for literary expression, he manifested a fondness for erudite phrases and esoteric terminology and doubtless often fell a victim to the deceits of language and the plausibility of a smoothly flowing phraseology, but he was saved by an ever fresh imagination and perennial youthfulness of spirit from the dry rot of intellectual stagnation and contentment with an outworn verbiage.

He was in fact as much poet and seer as scientist, if not more so. He remained to the end somewhat of a mystic and prophet. During the last decade he spoke often of the possibilities of a "new dispensation" for man in which civilization would enter on an entirely new era, free from most of the ills which make this life a vale of tears. He thus manifested an ever renewed hopefulness and a persistent optimism. There was about him, in fact, along with prodigious learning and broad experience, an undoubted historical and sociological naiveté which evidenced the idealist and dreamer. Far from arriving at the complete sophistication of the cynic he indulged his humanitarian longings (he early studied for the ministry) in writing a Utopia.

Born in the rugged hills of western Massachusetts in 1846 he traced his ancestry back on both sides to the Mayflower, his father being a descendant of William Brewster and his mother of John Alden.

Heredity gave him a vigorous constitution, longevity, and intellectual power. Two of his immediate relatives lived beyond ninety years, one to nearly ninety-nine. Those who have seen him in recent years working away with great industry, little recreation and only incidental attention to his physical well-being believe he might well have lived another decade. He took pride in his physical adaptability, his capacity to use tools and perform various handicrafts learned on the New England farm two generations ago. Some of us who a few years ago were only half his age have marvelled to see him running for a street car or climbing the long flight of stairs in the main building two and three steps at a time.

Perhaps heredity had something to do with his choice of a profession also, for both his parents and several of his aunts were teachers. He entered Williams College with the class of 1867. One of his intimates, Francis Lynde Stetson, says: "I well remember the day I first saw him, a green freshman, nailing an iron latch on the door of his room in West College. I was captivated at once by his fine head and his glorious eye, and returning to my room said to (Hamilton Wright) Mabie: 'I have seen a man.'" After graduating from Williams his educational training was most unusual in its breadth and variety. He spent a year at Union Theological Seminary, for his parents wished him to be a minister. Then came nearly four years of study in Germany. Returning to Union for his B.D. he accepted the pastorate of a little missionary church in Pennsylvania. Preaching, however, appealed to him less than teaching, for after ten weeks we find him back in New York serving as tutor in the family of Jesse Seligman, the banker. After one year he went to Antioch College and then to Harvard, for four and two years respectively. At the latter he taught sophomore English, studied philosophy and psychology under James, Bowditch, Everett, Bowen and Palmer, and took his Ph.D. He then spent two more years in Germany, making in all six years in that country during the period of its greatest intellectual pre-eminence. There he studied both widely and deeply under such world famous scholars as DuBois-Reymond, Virchow, Paulsen, Ludwig, Helmholtz, Wundt and Fechner.



G. Stanley Hall

He was a student in Wundt's laboratory for experimental psychology almost from the moment it was opened; and shortly after his return established the first similar laboratory in this country. Among his students at Johns Hopkins were Dewey, Cattell, Jastrow, Donaldson, Burnham and Sanford. On his election to the presidency of the newly founded Clark University in 1888 he resigned from Johns Hopkins and spent a full year abroad interviewing scholars and investigating the organization of universities and research throughout Europe.

Space permits scarcely a reference to the checkered career of Clark University. No institution of learning was ever more brilliantly conceived. Designed for research and graduate instruction only, its early faculty probably combined a greater galaxy of scientific talent than any university America had ever known. Deprived of a large part of its financial support after the third year, the university was reduced to a mere skeleton. For this miscarriage of a plan so full of promise for the advancement of science both gods and men must be blamed. Nevertheless, through the untiring efforts and devotion of Hall and his handful of remaining associates the university was saved. In it the spirit of free intellectual inquiry and eagerness to extend the bounds of knowledge flourished as they have not elsewhere in this country except at Johns Hopkins under the incomparable Gilman. Like the latter Hall was above all a teacher and inspirer of wide and varied scientific investigation. Though small in numbers the university was remarkably productive in scholarly output and became known to scholars in all countries. How much more of a tragedy it must have been for Hall during the last two years as he observed from across the street the rapid and almost ruthless destruction of the Clark he had fostered with so much care and travail! In silent pain he witnessed the dismantling of one department after another, and, above all, the annihilation of the precious and delicate spirit of intellectual freedom and eager search for that truth that shall at last make man free. And yet both his faith and his magnanimity were shown in his leaving his residuary estate for the perpetuation of the study of genetic psychology at Clark.

John Ferriar (1761-1815).—John Ruräh (*Annals of Medical History,* December, 1921), says that in view of the present interest in spiritualism and other mediumistic phenomena, it is interesting to review Ferriar's *Essay Towards a Theory of Apparitions.* . . . His views on the subject are most sane. He admits that it is an undeniable fact that the forms of dead or absent persons have been seen and their voices heard by witnesses who are trustworthy. "We may be allowed, however, to enquire," he writes, "whether the improved state of physiology affords any glimpse of light on this subject, and whether such extraordinary and terrible impressions cannot be explained from the known laws of the animal economy, independent of supernatural causes."

Practical Therapeutics

TREATMENT OF ACUTE AND CHRONIC POLYARTHRITIS, ARTHRITIS DEFORMANS, AND SEPTICEMIAS, WITH ACTIVATED COLLOIDAL SULPHUR

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INTRODUCTORY

The last three decades have shown marked progress in the development of the science of therapeutic measures. New positively acting drugs of which Ehrlich's 606 and Bayer 205 are probably the most conspicuous, have been evolved and tested; the most important results were gained in intensification of older therapeutic agents such as arsenic, mercury, antimony and bismuth by converting them into proper organic salts thus gaining higher therapeutic activity with corresponding lowering of toxicity characteristic of these elements. Certain of the recognized germs have succumbed to serums and vaccines. The search for prearations that will combat the pyogenic organism responsible for rheumatic and arthritic conditions has gone on steadily in the fields of chemotherapy and serotherapy.

The general rheumatic and arthritic conditions vary widely in their clinical aspects; they also show a wide variation of causes primarily responsible for their manifestations. Every practitioner is familiar with many types of acute and chronic rheumatic and arthritic clinical manifestations arising from infections from pyogenic bacteria. He is also familiar with many cases where the causes can be traced to faulty metabolism and abnormal sensibility to foreign proteins. With such widely varying etiological factors, the profession is not to be criticized for not having developed one therapeutic agent that could be used in the treatment of all these manifestations.

SULPHUR THERAPY

From times unknown Nature has been called upon to assist in the cure or to benefit the patient where there was available no drug of positive action. The curative properties of radioactive, iodine and sulphur springs have been known and empirically utilized since the dawn of history. The beneficial effects of some of these springs were recognized long before radium and iodine were isolated as chemical elements. The beneficial effects of sulphur springs were recognized before sulphur was put into its active form by means of chemophysical processes. Such sulphur springs as Aix, Amelle-les-Bains, Bagneres de Luchon, Bonne (France); Harkany, Herculesbad, Mehadia, and Teplitz-Trencsén, Pöstyèn (Hungary); Ischl (Austria); Mount Clemens (Michigan, U. S.), have well established reputations as being highly effective in the treatment of rheumatic and arthritic conditions arising from infective or metabolic causes. They have also shown their beneficial effects in other acute and inflammatory conditions.

The reasons underlying the results obtained at the sulphur springs when using the waters, vapors, and mud could not be satisfactorily explained for a long time. The sulphates of sodium, magnesium, potassium, lithium, and others, the chief constituents of these waters, do not have any specific effect on pyogenic organisms. Sulphur in its usual elementary form as known to the pharmacologist is not readily absorbable by the human organism; and when given internally in the form of socalled washed sulphur or flowers of sulphur, it is excreted almost completely in the same form as that in which it was consumed.

About 1830 it was recognized by a Hungarian druggist that some of the sulphur springs contained slight traces of elementary sulphur in a peculiar form which passed through filter paper and which did not settle except after several days' standing and exposure to light. This discovery occurred several years before some of the principles of colloidal chemistry were developed by Graham. In more recent times this form of sulphur was recognized to be colloidal in character produced by nature, mostly by the influence of light on sulphurated hydrogen present in the water; the catalytic action of light gives rise to a reaction combining the oxygen of the water and the air with hydrogen of the sulphurated hydrogen molecule present in the spring water thus liberating free sulphur partly in colloidal form according to formula $2H_2S+2O=2H_2O+2S$.

This was the origin of the idea that the sulphur element could be prepared in some active and absorbable form resulting in a potent therapeutic agent. Recognition of the beneficial effects of sulphur and the desire to find some active and reliable form led to various experiments recorded in voluminous American and European literature.

We need only mention in passing, the time honored family remedies such as sulphur and molasses, sulphur and cream of tartar, and a combination of the three; the attempts to influence pulmonary conditions by inhalation of air containing slight traces of sulphur dioxide and the partially successful attempt to treat gout and other rheumatic conditions by the administration of flowers of sulphur and very weak solutions of sulphur dioxide. Here an interesting bit of history arises. The method of inhalation then called fumigation was practised in American therapy as early as 1820 and described by Revere of Boston in 1822 under the caption Origin and Facts of Sulphurous Fumigation in the Cure of Rheumatism and Gout.

Some of the most interesting experiments in the administration of sulphur have been practised by recent French and German investigators; they injected intramuscularly and subcutaneously finely divided sulphur suspended in eucalyptus oil, olive oil and glycerine and reported favorable results. The method just described, however, could not become popular because of its painfulness and inconvenience to the patient. The French investigators then turned to colloidal preparations of sulphur but encountered the difficulty of being unable to produce a preparation which would be stable and reliable. The following table attempts to illustrate in more or less graphic

Used in the treatment of	*Europe*	*United States*	*Used in the treatment of*
Acute rheumatism Polyarthritis Arthritis deformans Inflammatory and catarrhal conditions of respiratory organs Skin conditions	*Spring waters	Springs	Acute rheumatism Polyarthritis Arthritis deformans
		Fumigation	
	*Flowers and milk of sulphur	Sulphur and molasses	Inflammatory and catarrhal conditions
		Sulphur and cream of tartar	
	*†Sulphur dioxide Lignite	Vleminckx's solution	Influenza Pulmonary complications
	*Ichthyol—sodium sulphoichthyolatum	Calcium sulphide	Bronchitis Laryngitis
		Springs	Pleuritis Empyema
	*Thionin	Colloidal sulphur	Erysipelas Typhoid Puerperal sepsis
	‡Sulphur in suspension in eucalyptus, olive oil and glycerine	*338 Internal and intravenous	Peritonitis Pyelitis—acute osteomyelitis Purpura hemorrhagica
	Springs	*§1914-1915 1-6 preparations	Carbuncles
	§Unstable colloids	1915-1917 217 preparations 1917-1924 338 preparations	Boils Septicemias and resulting secondary anemias and intestinal toxemias

*Internal †Inhalation ‡Subcutaneously and intramuscularly §Intravenous

form the progress in the art and science of utilizing sulphur as a therapeutic agent.

SULPHUR IN BODY CHEMISTRY

Sulphur is one of the elements which is absolutely essential to life. It exists in various organs and body substances in amounts bearing between one and two per cent. (albumen and proteins). The varying immunity to pyogenic organism and predisposition to rheumatic joint conditions are believed by many to be caused by disturbances in metabolism of sulphur and consequent disturbance in the nitrogen body chemistry. The generally recognized but not so universally used methods of sulphur administration previously described probably can trace their success to the facts just recited.

ACUTE POLYARTHRITIS AND CHRONIC ARTHRITIS DEFORMANS

In the practice of the writers at Hudson County Hospital, New Jersey, many cases of polyarthritis and arthritis deformans in various forms are encountered. Most of these are chronic with intensive joint involvements. In the treatment of these cases, vaccine and serums are of little help. In fact more help is to be expected from such agents in acute conditions. In the treatment of such chronic cases, the writers found such therapeutic agents as salicylates, iodides, atophan of little benefit. Accordingly, the writers looked for some material or preparation which would have germicidal properties covering various strains of streptococci and staphylococci, that is, a group of pyogenic organism and which also would raise oxygen metabolism of the body.

For their purpose in the treatment of cases to be described later, the writers selected a preparation known as 338 which is activated colloidal sulphur. This preparation contains element sulphur in a particular dispersion and possessing an electric charge rendering it highly physiologically and chemically active. By the application of radioactivity as an agent in the process, a stability of the preparation is obtained without the use of organic stabilizing substances such as albumen, gelatin and proteins which are used in other colloidal preparations for stabilizing purposes. Those substances render intravenous administration of such protected colloids often hazardous since they produce reactions of their own and furthermore may produce anaphylaxis; as applied to sulphur element such protective colloids may destroy entirely its germicidal properties and reactivity. Due to the purity of the preparation 338 the intravenous method of administration was adopted in the treatment of all cases coming under our care although on occasion internal sulphur administered orally was used to supplement the intravenous method.

ROUTINE OF INJECTION OF 338

The preparation used contains approximately twenty milligrams of sulphur element to one cubic centimetre of solution. One third to one half milligram of sulphur element to the pound of body weight in adults represents a therapeutic dose. This is equivalent to 2.5 to four c. c. of solution. In acute cases one injection was given every day for six consecutive times using four c. c. (seventy-five to eighty milligrams) as an average dose; then the same dose was repeated every second or third day respectively, as clinical conditions seemed to indicate. Injections were given before noon on a fasting stomach and food was not given until two or three hours after the injection. If given upon a full stomach, chills are much more likely to occur.

Injections are given under aseptic conditions and precautions governing intravenous administration of any drug. In the writers' experience covering over six hundred injections no accident or serious reaction occurred. The safety of the intravenous administration of this drug in these physiological doses is augmented by its biogermicidal characteristics. For injections, an all glass syringe was used. The ampule was opened just before the injection; a predetermined volume of liquid was drawn into the syringe and followed by an equal amount of distilled sterilized water. The liquid in the syringe was shaken, air expelled and the liquid was slowly injected in a suitable vein. Care was taken so as not to lose any liquid in the tissues surrounding the vein; otherwise

local inflammation may set up which may last for three or four days. In such case, the trouble may be relieved by compresses of twenty-five per cent. alcohol. Miscarried injections never produced necrosis of tissues. After an injection the patient is held under observation for a short time and then allowed to go about.

(To be concluded)

THE TREATMENT OF BUBONIC PLAGUE

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The only treatment for a confirmed case of bubonic plague is intravenous injection of Yersin's serum, but to be of avail, serotherapy should be resorted to early, as soon as the diagnosis has been made. In epidemic centres, a suspicion of plague should cause an immediate resort to this treatment, but elsewhere, in case of doubt, it is better to inject forty to fifty c. c. of serum while awaiting the laboratory report.

The serum should invariably be given intravenously, as its absorption by the cellular tissue is slow and since Yersin's serum is more antibacterial than antitoxic, it is indispensable that it should enter the circulation quickly. The treatment should be massive and the first dose in an adult in which the process presents a serious aspect should be from eighty to one hundred c. c. In cases of medium intensity, from sixty to eighty c. c. would be sufficient. In children over six years of age from forty to fifty c. c. may be given, and in subjects four years old twenty c. c. can be injected daily without any danger.

Cases should be looked upon as severe when the temperature is 104° or over, with a large, painful bubo, and when the general phenomena from the onset are very pronounced, with torpor or delirium. Cases of medium intensity offer a temperature of between 103° and 104° F., with slightly pronounced general symptoms and a painful bubo. Benign cells are those where the temperature does not reach 102° F., with little pain in the bubo and the general symptoms mild or subsiding. In the larvate or ambulatory cases, if confirmed clinically, sixty c. c. of serum should be the initial dose and fifty c. c. if the diagnosis is doubtful, while waiting for the laboratory report. In patients in a very serious condition, in whom it is impossible to determine exactly the length of time the disease has been present, or in the pneumonic or septicemic types of the process, the initial dose should be 150 c. c. given at once, and it has been the practice of some English observers to give ten c. c. subcutaneously every hour in the interval of the intravenous injections. Treatment must be prolonged, the serum being injected in the same dose every day until the temperature falls. When it reaches 98.6° F. the injections are to be given for two more days in a somewhat smaller dose. If after the initial injection the temperature continues to rise, a second injection in the same dose is to be given a few hours later. Some patients have been given as much as 750 c. c. to 850 c. c. in one week.

Reaction may be immediate or late. The former consists—after large doses of serum—of nausea, oppression, chills, acceleration of the pulse, phenomena which indicate that the injections should be stopped, but with doses of one hundred c. c. or less they are not apt to occur. Late reactions consist of a return of the temperature to 102° to 103.5° F. after a phase of apyrexia. No serum should be given and a few hours later the characteristic phenomena of serous reaction appear, namely, joint pain, sweating, dryness of the mucosæ, urticaria or rubeola, or even hematuria or purpuric patches. These phenomena are without danger, and if necessary may be alleviated by four grams of calcium chloride or one gram of urotropin daily. If for some reason intravenous injections cannot be given, a dose of serum exceeding sixty c. c. of serum should be given subcutaneously in two different doses. Quite frequently there will be an immediate local serous reaction consisting of a mild pruriginous purpuric eruption. There is no special treatment for the bubo. Incision will hasten its evolution, but it should be done only when suppuration is thoroughly established.

AN ALUM OIL SPRAY AND EUSTACHIAN AND NASOPHARYNGEAL LARYNGEAL VAPORIZING TUBES

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As I began practice in a neighborhood where there were many actors and singers, I stocked up with all the nose and throat sprays about which I had learned and could learn. I found that none of those sprays was at all ideal in chronic catarrhal conditions. From time to time I made up a few new sprays and tested them. In the spring of 1910 I tried to dissolve some alum in liquid petroleum. The preparation was almost thrown away because the alum had apparently not dissolved at all but it occurred to me to put some of the upper portion of clear oil into an atomizer and test it. It was astringent, altogether too astringent! I then made one dilution after another, testing each one, and finally reached a most useful spray. In order to pass this spray along to some medical friends I prepared a formula which states essentially the chief steps that I took in making the first and only batch that I have made:

Use the finest powdered ordinary alum and good thin liquid petroleum. Make up a strong stock solution of about four ounces by putting one half grain of alum into each ounce. Let this stand for one or two days to dissolve so far as possible, stirring it occasionally. Then visually estimate the amount of alum that has not dissolved and, after removing (by decanting the solution) the undissolved portion from the bottom of the receptacle, add this much more alum to the oil and let stand one or two days longer. Then the undissolved portion in the bottom is again removed and the resulting solution is the strong stock solution. Into a pint bottle put one and one half drams of this strong stock solution and fill up with plain oil. The resulting solution is the weak stock solution. Into a quart bottle put one tenth quart of this weak stock solution and fill up with plain oil. This last solution is the one for general use. I always shake the bottle before using although it may not be necessary. It is preferable to use hard rubber feed tubes in atomizers

when possible because the alum acts on brass tubes and in time makes the solution greenish.

Of course, with further investigation this formula could be simplified but, as it is already practical and provides a large quantity of solution and as I have already spent much time on it, I feel that it should be announced without further delay.

This alum oil spray is by far the best astringent spray that I know of in chronic catarrhal conditions of the nose and throat. Whenever the mucous membrane of the nasal passages is chronically thickened this spray gives much relief, contracting the tissues and diminishing the secretion. Breathing is made much freer. In case of slight infection of sinuses it may sometimes so shrink the mouths of the sinuses as to restore drainage and cure the infection. Its astringent and possibly slightly antiseptic action may sometimes be made to act directly on the mucous membrane lining the sinuses by throwing a spray or, better, a vapor into one nostril and then quickly holding the nostrils closed with the fingers and gently blowing the breath outward against the closed nostrils, the vapor being driven by the breath into the sinuses. Only gentle force should be thus used by the breath.

It should, of course, be said that this spray can-

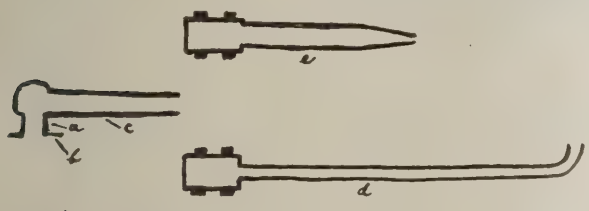

FIG.—Eustachian and nasopharyngeal-laryngeal tubes.

not take the place of operations, although it may occasionally make an operation unnecessary and alleviate cases that cannot be operated on.

Most patients who use this spray at first persistently think they should pump it into the nose from one to three times a day as they have been accustomed to do with other sprays. If they do, the conditions from which relief is sought will be made worse and the mucous membrane will become sore. It should be used only as often as the mucous membrane resumes its former swollen condition and this interval is usually several days in chronic conditions, often a week or longer. The fact that this spray needs to be used infrequently should really be one of the most valuable points about it from the practical viewpoint of the patient. Furthermore, it should be used in a very small quantity at a time lest it cause irritation, one or two actual sprays being usually enough each time. The mucous membrane of nervous people is particularly sensitive to it. In a previous article I stated that a certain emotional condition which affects the turgescence of the nasal mucous membrane is the chief cause of hypertrophic rhinitis. These cases require general treatment as well as local nasal treatment.

This spray relieves the congestion and excessive secretion of chronic pharyngitis and laryngitis. The tone of the voice is often very much improved. The throat is not so sensitive to the spray as the nose but it should not be used too often.

In acute rhinitis the spray is not so good as milder sprays, although it may be of some benefit if used cautiously in some people who are not sensitive.

One hay fever patient volunteered to try the spray but the nasal irritation was aggravated. I know of no other case of hay fever in which it has been used and I would not prescribe it for that ailment.

Acute pharyngitis and laryngitis are often well treated with the alum spray if it is used with caution.

My spray is again the best one in cases of swelling and inflammation of the eustachian tube and is possibly of value in early slight infection of the middle ear. A spray or vapor thrown against the pharyngeal end of the tube is sometimes sufficient to stop the disturbances, the tissues thereby being made to contract sufficiently to restore ventilation. A vapor from a nebulizer is best thrown into the eustachian tube by means of my eustachian vaporizing tube which connects with the eustachian catheter, although, if it is considered permissible, a vapor may be placed in the nasopharynx by my nasopharyngeal laryngeal tube and then blown into the eustachian tube and middle ear by the Valsalva method.

It is hoped that others will help to determine the exact applicability of this spray.

In order to obtain improved apparatus for using a vapor of my alum oil solution I devised several years ago special attachments and tubes, but any oil spray can be used in this apparatus.

The drawings appearing here are about half actual size. A vertical tube a, projects a short distance upward from the top b, of the bottle. To this vertical tube is attached a horizontal tube c, one and a half inches long and on this horizontal or stem tube fits either of two removable tubes, one, the nasopharyngeal laryngeal vaporizing tube d, four and a half inches long with a distal end which makes a curve and projects one quarter inch in a direction at 90 degrees to its main tube, and a second tube, the eustachian vaporizing tube e, two and a half inches long, the distal tapered end of which fits directly into the large end of the eustachian catheter. Each of these two tubes has a long doubly milled collar on the proximal end. These milled collars are easily held in the fingers and can be pushed over the slightly tapering end of the horizontal stem tube so as to make an air tight joint.

By turning the collar of the nasopharyngeal laryngeal tube its angulated end can be so directed that a vapor can be thrown in any direction at a right angle to the main tube so that it will reach the upper nasopharynx, the posterior nares, the pharyngeal ends of the eustachian tubes, and the larynx. (The other, straight tube may be used to throw a vapor on directly accessible parts.)

The eustachian vaporizing tube would be improved by being made one or two inches longer to facilitate handling. This makes a very satisfactory apparatus for throwing a vapor into the eustachian tube and even into the middle ear. It has no cumbersome length in which the vapor is wasted before reaching the tissues and there is in it no rubber tubing to become useless. As this tube is short, however, the force applied to the bulb must be gentle lest too great a volume of air be driven into the middle ear.

Historical Medicine

Kidney Physiology and Anatomy According to Hippocrates and Aristotle

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For a period of two hundred years the Persian power was paramount along the shores of the Eastern Ægean and in the hinterland. As we learn from Herodotus the island of Cos suffered from its inroads, not like Cnidus and the Ionian cities of the mainland, but its influence also pervaded Cos. During this period a son of one of the priests of Æsculapius, bearing his father's name, played in the shadow of the temple walls. Along the corridors within where lay the sick, if they were lucky lapped by the tongues of dogs and visited by snakes and by Æsculapius himself in their dreams, the boy following his father may have looked up and seen the votive tablets hung in gratitude or supplication on the walls. On some of these, pinned there for instruction, there was writing in ancient script and we may imagine the boy in his school exercises spelling out the archaic words and allowing, by thus lingering over them, their meaning to sink into his consciousness.

Whether this young Hippocrates, second of the name, or a later or an earlier one wrote down the Coan mottos on a more portable palimpsest no one seems to know, but from some such one originating in some such way they have been preserved for us by eighty generations of men. It is best to read them in the ancient tongue as did the boy. He spelled out the words doubtless in a tongue that was his own, however quaint the words, lingering over them and letting his imagination sweep across the centuries from Egypt and the Ionian cities. As he grew older they mingled with his conceptions of what he saw there along the shady corridors, patients prostrated with the fevers of the Mediterranean, typhoid and typhus perhaps, but certainly malaria, doubtless of differing types, septic fever from wounds or whatever cause, pleurisies, pneumonias, acute phthisis, all classified in a way he could understand and we can not. Thus as the modern reader slowly extracts the meaning of the old Greek and tries to bring the list in line with our modern categories the mind has time to draw pictures of the scene and the scenery, remembering the chiseled figures along the brim of some old cup or the fragment of some façade rescued from the dust and mould of two thousand years and furnishing us, in our modern processes of reproduction, the material out of which we can build dimly that old life traveling along the wavering borderline of prehistoric times.

Far down the centuries from Hippocrates, Strabo (1) saw at Cos the celebrated temple, full of votive offerings and on its walls the picture of Venus emerging from the sea, not there in the time of Hippocrates and in Strabo's time to be carried away to Rome by Augustus and dedicated to Divus Julius Cæsar. Strabo tells us of the tablets and the wall inscriptions, tablets like those at Epidaurus and Tricca in Greece. These looked down in the moonlight of the pillared wards and, if not in their dreams, in their imaginations, which were then the most awake, the patients saw the shadowy forms of Æsculapius and his daughters, Ilythyia, Panacaea, Hygeia, pacing these corridors along which the to us scarcely less dim figure of Hippocrates followed his father.

Somewhere Galen says the Æsclepiadæ handing their art down from father to son, anatomy was taught to the boys as a part of their elementary education and it came to be such a matter of common knowledge in a close trade union of the art of medicine they rarely wrote of it. There is, however, a work on anatomy (2a) included in the Hippocratic Corpus, which is a fragment of a work probably antedating the birth of Hippocrates II. From this we get the information that "from the gates of the liver goes the slanting (scalene) vein down to below the kidneys." In the *II Epidemics,* which, it has been conjectured, is the work of a son of Hippocrates II, the author says two vessels (veins he calls them) starting from the clavicle, after going beneath the pleural cavity, go to the subumbilical region. "From there I do not know where they go" (2b). While it seems almost impossible this could have been written as late as the time of Aristotle it is scarcely suggestive of Galen's idea that these boys of the Æsclepiadæ could have imbibed much anatomy with their mothers' milk. If it was a son of Hippocrates II did not know and apparently did not care much what became of the abdominal aorta and the vena cava, it seems probable the child's course in anatomy was not very thorough. At any rate this must have been written a number of years before the birth of Aristotle which is supposed to have been about 334 B. C. while Hippocrates II, sometimes said to have lived a hundred years, most commonly has the date 460 B.C. given as the year of his birth.

It is, however, the quotation from the anatomy stressing the connection of the liver with the kidneys, by mentioning a direct route to it by a hollow vessel, which I wish here to keep in view. In order to develop an account of the erroneous ideas that were entertained by Hippocrates, but especially by Aristotle, as to the kidneys, it is necessary to review the gross errors of the anatomy with which they were entangled, for we shall find some even of the Galenic physiology issuing from a tendency of shading the anatomy to suit preconceived ideas of vital function, even after from Egyptian Alexandria came the light of a vastly better anatomy. While the trace is a faint one which leads back from the Hippocratic anatomy, to which I have just referred, to the Egypt before his time there seems no escape from the conviction that there was a path from the Nile across

the waters and by the land routes over which the undertaker anatomy of the Ancient Egyptian passed to the Greek.

The embalmers' anatomy is what one finds in the Papyrus Ebers. The old embalmers of Egypt, accursed of the gods and abhorred by man, were not curious whether it was air or blood or water flowed along the vessels, and even Aristotle thought it was air, at least in the artery, but let us note in this ancient Hippocratic fragment of a book of anatomy that the bronchi were not differentiated from the arteries by name and with this we are particularly struck in the Papyrus Ebers. The aorta even was only first by Aristotle given definitely the name which formerly applied to the air passages as well. In close juxtaposition in the Papyrus Ebers as in the Hippocratic Anatomy we find two vessels go to the kidneys and four to the liver. There seems reason to believe the Egyptian anatomist had in mind the "bronchi" in this connection or he would have made two vessels go to each of the kidneys, in order to include the veins. It is singular that the Greeks who did much for almost all branches of science and art and literature, when they took over the civilization of the Orient, should have done so little for anatomy until they went back with it to Alexandria. The *Praenotiones Coaci* are the origin of the *Prorrhetics* and upon them is built the superb semeiology of the Hippocratic Corpus. They have a very close affiliation in form at least with the *Cnidian Sentences*. The latter was the last word of the Orient and the Praenotiones the first word of western civilization.

Temple of Æsculapius at Cos

Ancient archeology has in later years confirmed the view long held before its rise that medicine in the Hippocratic writings had its origin in the older civilizations, but the Greeks with a magic wand seem to have touched it and freed it of magic and mysticism and converted it into a science, but they did it apparently without any benefit from morphology at the time, for there was none apparently, or very little, before Aristotle. He succeeded to the science that was open also to Plato, who declares in the *Timæus* (3): "The lung is full of holes like a sponge in order to accommodate the pneuma and the *drink* it receives." We see, therefore, before Aristotle not only structure but the functions of the conduits of the body were not differentiated.

Why Plato should have entertained this notion of primitive anatomy, if the *IV Maladies* of Hippocrates had been written and was current in the world in his time it is difficult to imagine. For in it, it is declared (2c) that such belief as that drink goes to the lungs is a mistaken opinion. Indeed this book of the Hippocratic Corpus once ascribed to Hippocrates born in 460 B.C. seems to be referring in refutation to this very passage in the authenticated late work of Plato born thirty years after Hippocrates. The author of the *IV Maladies* asserts that those who hold the opinion that drink goes to the lungs are deceived by the fact that "the lung is porous and there is a pipe going to it." In the book on the *Nature of the Bones* which is also a compilation and in many parts alien to Hippocratic thought the kidney is likened in form to a heart (2d). "They have cavities which resemble ventricles turned toward the veins, whence the veins grow out of it to the bladder. Then the water is as though filtered through the kidneys and through these same interior channels which it follows. For that which leads from them to the bladder is spongy and the urine is filtered and secreted from the blood." I follow Littré's translation for I do not pretend to understand the passage.

In a previous paragraph the author of the treatise is likewise confusing: "Drink through the pharynx and œsophagus; the larynx into the lungs and tracheal artery: from these parts to the top of the bladder." In the book *On the Heart* (2e) this seeming idea of the drink going to the lungs is only partly shared. Some of it goes along with the air but most of it goes to the belly. In all this one gets the atmosphere of the ancient Egyptian anatomy, but still we get here the inquiring mind of the Greek—the intrusion of the experimentalist. It is in this book is cited the experiment by which it is proved the drink goes to the lungs. A pig given blue colored water, his throat is cut and it is seen in the larynx. The question of the authenticity of this book, which seems a collection of anatomical notes, is too complicated for any exposition by me, but the reader can consult Littré and Adams. We see, however, it is permissible to point out there evidently was a large belief loose among the Æsclepiadæ in the fifth and sixth centuries B.C. that some at least of the fluid swallowed went into the larynx and thence more or less directly to the bladder and we shall find Aristotle looking on the bladder not alone as a reservoir but as an organ secreting the urine, the kidneys being only adjuvant to this function.

While both Littré and Adams have a high opinion of the work called *The Glands* (2f) the ancient critics apparently did not consider it highly enough to mention it as a Hippocratic book, but if Littré is right in his surmise that it is affiliated with the Cnidian School of Medicine, or on the supposition it is an early Coan treatise, we can understand the confusion about the destination of fluids and indeed there is no reason why we should not regard as among the most ancient of the books of the Corpus those in which the pulmonary route is the way chosen for them. In *The Glands* it is said: "The kidneys also have glands, for they are saturated with much water, and the glands here have more of it than gland structure elsewhere, for the water running in

is not absorbed by the kidneys, but runs through down to the bladder so that what they gain from the conduits (arteries?) this they draw to themselves," and here we find confusion worse confounded in no way elucidated by Littré's translation.

Plutarch in the *Symposiacs* of his Morals (4) makes some of his interlocutors defend the opinion they profess to find in Homer, Alcaeus and even in Euripides and Hippocrates that water passes into the lungs when swallowed, saying also that Erasistratus took the trouble to refute the opinion of Plato. Is it possible he is the author of the refutation in *IV Epidemics?* On the other hand Eratosthenes, Protagoras, Eupolus shared Plato's view. It is quite possible that in the Hippocratic Corpus as it existed in the time of Plutarch, who lived perhaps a hundred years before Galen, there was more testimony for that contention, but as we know it the assertion made in Plutarch's *Symposiacs* that Hippocrates thought of nothing else is not borne out. We see, however, that there is no reason to doubt it was primitive doctrine at the rise of Hippocratic medicine.

(*To be concluded.*)

Contributors to the Science of Medicine

CHARLES EDOUARD BROWN-SÉQUARD

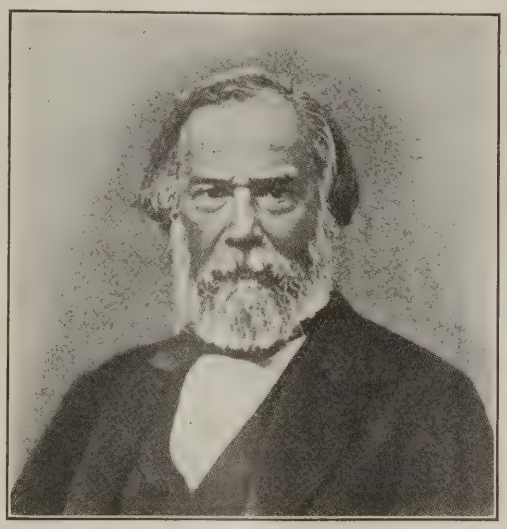
Charles Edouard Brown-Séquard has been characterized by one of his biographers as "a scientific Ulysses, who saw the manners and cities of many men." He journeyed across the Atlantic Ocean more than sixty times, never settling long in any one place. Thus the sea captain father, lost at sea several months before his son was born, lived again in him. Captain Brown was a skipper in the American Merchant Marine, sailing from Philadelphia. On one of his voyages in his square rigged sailing vessel he touched at Port Louis, chief city of the Island of Mauritius in the Indian Ocean. Mauritius was at that time one of the French colonial possessions and so had many Provençal colonists, among them the Séquard family. Captain Brown persuaded one of the charming daughters of this family to share his life as a sea rover, and it was in Port Louis that their son was born on April 8, 1817. The father had set sail for India some months previously and neither he nor his ship was ever again heard of. The mother took in sewing to support herself and her baby, peddling her work through the service of an old slave woman.

When Charles Edouard was fifteen, it was decided that he should add to the family finances through clerking in the general colonial store, which served, for lack of anything better, as a kind of club for the town's four hundred, including a number of literary lights of local renown. The young clerk soon made quite a reputation for charm of manner and intellectual accomplishments, and inspired by the admiration and encouragement of the colonial litterateurs, resolved to devote his life to poetry. He also attempted novels and plays, but there is no record of the latter's ever having been performed. These literary efforts were considered by the Port Louis critics as real masterpieces, and the youthful writer decided that he must go to Paris to seek fame and fortune, and persuaded his mother to accompany him. Both arrived at the French capital in 1838 with an introductory letter to the critic, Charles Nodier. To him the young colonial writer submitted his literary productions—and received probably the greatest shock of his life. The great critic advised him to seek elsewhere than in literature for the means of livelihood. The disillusionment was bitter, but Charles Edouard was never one to let the Fates rule him, so he decided, with as much firmness as he had taken up writing, to devote the rest of his life to medicine. He had had practically no education, so set resolutely to work on the rudiments, adopting a program for his day which he continued throughout his life—bed at eight and up again at two in the morning to study. Of his medical studies physiology interested him most, especially the laboratory side. He had made a good start, when his hand became infected from a postmortem wound and he was laid up for several months. He had hardly gone back to his work when his beloved mother died, and he was so completely overwhelmed by her loss that he gave up all work and began a life of wandering in his effort to find some solace. His friends came to his rescue, however, with good advice and funds and he was persuaded to return to Paris, where he took his medical degree in 1846. His thesis was on the reflex function of the spinal cord, a subject which continued to interest him profoundly throughout his lifetime. During these years he was very poor and lived in wretched lodgings without heat and swarming with the rabbits and guineapigs which he used in his experimental work. His food was reduced most of the time to bread and water. These early privations left marks on his rugged constitution that were never effaced.

However his Parisian life and his excellent work had brought him into contact with many of the great scientists and men of letters of the capital, and he in conjunction with some of these, including Claude Bernard and Charles Robin, organized and founded the Société de Biologie. Brown-Séquard was one of its first secretaries and throughout his life continued to take an active part in its work.

In 1852 he got into trouble on account of some of his political opinions, and found it wise to leave the country and come to the United States. He took passage to New York on a sailing vessel in order, so he declared, to have time to learn English *en voyage*. He earned his first money in this country by giving French lessons, but was soon taken up by some of the medical authorities, especially those who had studied

in France, and with them undertook a crusade for introducing experimental physiology into American medical schools. At this time he perfected and gave out for publication two of his greatest discoveries—that of the production of epilepsy consecutively to a lesion in the spinal cord of a guineapig, and that of the vasomotor function of the sympathetic nerve. The young doctor soon found out, however, that pure science did not "pay" any more in America than in France, and he was driven, to keep body and soul together, to the practise of cheap midwifery. This led to his collaboration in a work on obstetrics, which proved to be so successful that it brought him a small fortune, on the strength of which he married.



CHARLES EDOUARD BROWN-SÉQUARD

The next year he returned to France, but failing to find an opening for his work, set sail for his birthplace, the Island of Mauritius, arriving in time to cope with a cholera epidemic. The citizens of Port Louis had a gold medal struck in honor of these services to his native town.

Soon after the University of Richmond, Va., appointed him to the professorship of physiology, and he went there to take up his duties, but, finding the atmosphere uncongenial, resolved once more to try Paris, especially since the Académie des Sciences had awarded him a prize. Here he and Robin established a small laboratory, where many pupils afterward celebrated throughout Europe received their training. It was at this time that Brown-Séquard published his famous paper on the functions of the suprarenal glands in which he describes the experiments that led to his discovery of the internal secretions of glands. For several years he traveled through the British Isles demonstrating his discoveries in London, Edinburgh, Glasgow, and Dublin. This work made for him a great and permanent reputation as a physician, and led to many notable honors and positions, among them the chair of pathology of the nervous system at Harvard University. He had virtually decided to devote the rest of his life to work in the United States, when he lost his wife and the whole joy of life faded and went out for him. He returned to Paris and shut himself up in a laboratory. The next year, however, he consented to accept the position of professor of experimental physiology in the Paris Faculty of Medicine, but fell in love with another American lady, married her, and returned to New York. Here he founded the *Archives of Scientific and Practical Medicine*. In a year and a half his second wife died and he returned another time to Paris, a widower and a broken man. He spent two years wandering about France, England and Scotland, refusing meanwhile various offers of positions. Then he was married again, and at about the same time accepted the professorship of physiology at Geneva. Before he went to Switzerland, however, Claude Bernard's death left vacant the chair of experimental medicine in the Collège de France. Brown-Séquard was appointed to it in 1878, and this resulted in putting an end to his wanderings, for he spent the rest of his life in France. In 1894 he was once more left a widower, and on April 1st of that year he died. A biographer writes: "Brown-Séquard's name will live in the history of medicine as that of one of the master builders of the stately edifice of modern neurology. To him science owes the discovery of internal secretion, the application of which was the beginning of organotherapy."

One of the First Operations Performed

Augustin Thierry calls history a narration; Guizot calls it an analysis; but Michelet, the brilliant historian, considers that history should be a resurrection. Paris is full of memories, perhaps fuller of memories than any of the big cities with the exception of Rome, Naples, and Venice, although none of these can be compared in size with Paris. The French city has more of the romance of history than London, and especially of literary romance, as it must never be forgotten that Paris is on the whole the most literary centre of all time. France, too, has always been famed for her surgeons. When in England skillful surgery was unknown, Ambroise Paré was performing wonderful operations. In January, 1474, the churchyard of St. Severin, near the Boulevard St. Michel, on the other side of the Seine, was the scene of one of the first surgical operations done in France. At that time the physicians and surgeons of Paris represented to Louis XI that as several persons of consideration were then suffering from stone, colic, and other internal maladies, it would be of the greatest benefit if in order to trace the disease and discover a cure, the said physicians and surgeons were permitted to operate on a living man. The request was granted and the prisons were searched, until an archer was found suffering from the required malady, and condemned to be hanged for theft as well. He was taken to the churchyard of St. Severin, and there, with a flat tombstone for an operating table, amid a large concourse of people, the surgeons set to work. Contrary to their expectations, the patient not only survived the operation, but was pronounced cured in fifteen days' time. In consideration of the service he was pardoned and set free.

Editorial Articles

AROMATICS

Time was when noisome smells were believed to spread disease and among the more ignorant this belief is not dead. If the man in the street were asked why stenches were abolished he would answer because epidemic diseases were bred and spread by these means. Of course there is a substratum of reason in this superstition, for although filthy smells from drains and cesspools do not induce or disseminate directly the germs of contagious diseases, it is true that with bad smells there is an accumulation of filth which soaks through soil and subsoil, contaminates surface wells, so that only a typhoid or diphtheria carrier is needed to start an epidemic far and wide, and typhus fever, always known as a filth disease indirectly, as it is carried by lice which are only harbored by dirty persons in whom strong personal odors prevail.

The study of smells in fact is highly interesting and there has been published recently a book on smells written by a well known laryngologist of London, which it is no misnomer to state is fascinating. Dr. Dan McKenzie in *Aromatics and the Soul* has put the facts with regard to smells contained in the book in an instructive and intriguing manner. He points out that the objection to nasty odors is an outcome of that refinement of feeling which accompanies a high state of civilization. The greater the culture the greater the increase in the delicacy of the senses. The sense of disgust is heightened in men and women who strive after refinement. There is naturally a close and intimate connection between the sense of smell and the nerve centres, which, when stimulated, evoke the feeling of nausea in the mind, and the bodily acts that follow. It is nature's mode for preventing the ingestion of evil smelling things. But attention is drawn to the point that like all other nerve reactions this particular reflex can be educated, one way or the other. It can be blunted or degraded, or it can be rendered more acute, more prompt to react. Now one of the effects of civilized life, of town life, is to cut short the period of all reflex action. However, while it appears to be true that the sense of disgust aroused by unpleasant smells has come in with ultracivilization it is somewhat extraordinary to recall that it is only comparatively recently that modern civilized countries have put their houses in order in this direction. Great Britain has been the pioneer and yet up to the beginning of the nineteenth century London, according to G. V. Poore, a great authority, or paved only with rough cobblestones. There were or paved only with rough cobble stones. There were no sidewalks. The houses projected over the roadway and were unprovided with rainwater gutters, and during a shower rain fell from the roofs into the middle of the streets. These streets were filthy from constant contributions of slops and ordure from animals and human beings. There were no underground drains, and the soil of the town was soaked with the filth of centuries. This sodden condition of the soil must have affected the wells to a greater or less extent.

The nineteenth century was well on its way before the last of the private cesspools disappeared from the dwelling houses of London. As was London, so were cities in all parts of the world including this country, they one and all simply reeked with stenches of various and diverse kinds. And yet the people of that time, the higher classes at least, were fully as cultured as those of the present time, in some ways more so, although now culture is more widely diffused. Egypt, Rome and Greece, at the height of their glory, were as cultured as the present inhabitants of civilized countries and they were a cleanly people to whom obnoxious smells were abhorrent. Thus it is doubtless true that culture and delicacy of smell go hand in hand.

As for personal smells, each race has its own peculiar odor and a keen nosed man of one race can detect the nationality of a member of another race by his bodily odor. For example the Chinese and Japanese find the immediate neighborhood of Europeans highly objectionable and the Europeans return the compliment. The emanations from the skin of the negro are offensive to the white man and it is said the negro has a distaste to the smell of the Caucasian.

Perhaps the part of Dr. McKenzie's book which will appeal most strongly to the medical reader is that which discusses the especial odors pertaining to certain diseases. As is pointed out, to the keen-sensed medical man certain morbid states can be recognized by their exhalations. The author has even heard of an enthusiast on the subject who alluded to them as "both visible and tangible" but he thinks this must be exceptional.

Physicians of the last generation used to speak of typhus fever as having a close, mawkish odor, and the smell of smallpox is horrible. But these, as well as the appalling stench of the hospitals in olden days, both in Great Britain and in America, are among the smells which for the most part, have fled.

There are others, however, less powerful and repugnant, which are still with us, and which we recognize as among the prominent characteristics of some maladies, the acid smell of acute rheumatism for one, and McKenzie has sometimes thought he could detect a characteristic odor also in acute nephritis, a smell resembling that of chaff. The odor of a big hemorrhage is unmistakable and, to obstetricians particularly, ominous. Then there is the smell of mice which attends upon the skin disease known as favus. The breath of a chronic drunkard is familiar enough to everybody, and the more delicate aroma in the circumambient atmosphere of the careful tippler, ethereal and by no means unpleasant, will often reveal to the physician the hidden cause of obscure symptoms. It is particularly valuable when your patient is, as many of these secret drinkers are, a woman, it may be a woman of good social standing. A disease odor of great value and significance is the sweet smelling breath caused by acetone poisoning in the later stages of diabetes. Bacon says that a sweet smell attends the plague.

The author does not mention the unpleasant odor coming from those who are afflicted with long standing intestinal stasis. The odor in some of these cases is very pronounced.

With respect to the part played by olfaction in sex life which is undoubtedly prominent in the mating for four footed animals, McKenzie thinks that the reasoning that this is a strong argument in favor of its potency in mankind also, is fallacious. Havelock Ellis made an exhaustive inquiry into this matter and decided that the attraction, subtle as it is, is seldom or never obviously olfactory. On the other hand, although this is not referred to in the book, man in his primitive state was like the animals, but to lesser extent, lured by the scent of the female at certain periods. He has evolved from this state or nearly wholly so. There are those who hold that the olfactory lure in some instances still wields its power.

IS NUISANCE PREVENTION PUBLIC HEALTH WORK?

This is the question put by Dr. Charles Chapin, superintendent of health of Providence, in a controversial article in the *American Journal of Public Health*. Dr. Chapin opens his argument by stating that few municipal health departments do enough for public health, and that the chief reason for this is lack of money. He goes on to distinguish between public comfort and public health and asserts that in many places the terms are synonymous. "It seems to me," he writes, "that the health department, in the end, can only stand true before the public and compete with other departments in the construction of the budget, if it devotes its money and energy to the prevention of disease. Because a certain thing may indirectly or as a secondary effect influence public health, is not a valid reason for inflicting it on the health department. A wise tariff, an efficient trolley service, a sound currency, cheap coal, honest advertising, and the enforcement of the Volstead Act, would undoubtedly influence health. But no one expects the health department to secure these blessings."

He concedes that the abatement of some very flagrant nuisances clearly saves lives, but finds that the health reports of many cities show that the nuisances receiving attention relate to untidy yards, alleys, dumps, vacant lots, cellars, etc. Others relate to the handling and disposal of garbage, to stables and pigpens, defective plumbing and drains, and many other disagreeable things that "rarely have a direct bearing on health." He considers "one of the most farfetched, useless, and time consuming developments of the old nuisance idea is clean up week." Such a week, he says, consumes about two months of the health department's time and much money. Another argument against nuisance abatement by the health department is the energy consumed. He recommends that such work be done by the police department, leaving the health officer free to devote all his time and money to saving life.

"Nuisance inspection keeps alive the spirit of the filth theory. The public still believes that all dirt is dangerous. It is sad to note that not a little of the much vaunted public health education of today is contaminated by this theory. Many a cartoon pictures devilish germs emerging from a garbage can or perched on a dunghill. Many a catchy phrase in the weekly bulletin teaches that any dirt is dangerous, and that odors are deadly. Let us discharge our professional propagandist and ever stand at the shoulder of the health cartoonist. Then, when we are teaching only the truth, let us fit our practice to our teaching and give up chasing bad odors under the guise of protecting public health."

There is no doubt that much of what Chapin writes is true. But there is another side of the problem to which he does not give due consideration—the psychological side. He forgets that public health work is still in its infancy, especially in the small towns and in rural districts. The general public has to be taught chiefly through the outward and visible sign to perceive later causes and results. Hence, clean up week. It would be the height of folly to undo what has been done in the way of arousing general interest by telling people that a great many of the things they have been doing to clean up their towns are really of no value. And are they really of no value? Surely the esthetic plays a large part

in the lives of most of us, and should play a much larger. "A dead cat," as Dr. Chapin states, "will not cause diphtheria"; but who wants to keep one? "A burning dump will not affect health"; but it is certainly most unsightly and offensive. "Garbage in the ash heap never results in typhoid fever"; but it is filthy and a breeding place of disease carrying vermin. "An uncovered cesspool is a cause of death only by drowning"; perhaps, but what neighborhood enjoys having one in their midst? True, all such things can be "seen by anyone," as Chapin argues, and certainly by the police; but has "anyone," or even the police, the necessary training to distinguish between the merely obnoxious nuisance and that which is a real menace to public health?

THE HEALTH OF SCHOOL CHILDREN

The child is father of the man and the health of the rising generation is a fair criterion of the future of a country. In order that children may be physically and mentally healthy, it is essential that they be well fed, not overfed but fed in moderation on suitable diet, properly housed and clad, and allowed opportunities for exercise in the open air. Also their school life must be followed in healthy surroundings. This may seem difficult in the slums of cities like New York and London, but much can be done. Evidence of this is afforded by the annual report of the Chief Medical Officer of Health of the Board of Education of England and Wales for 1922, dealing with the health of the school child. The report, on the whole, is distinctly encouraging. Sir George Newman, the chief medical officer of health, points out that the unparalleled conditions of unemployment and financial restriction prevailing in England have not had the harmful effect on child life which might have been imagined. In fact, he considers that the pause which the need for economy has imposed in the expansion of school medical work may be looked upon as a not unmixed disadvantage. However, the report lays emphasis on the gross inequalities which exist between various areas and lays urgent stress on the fact that a minimum standard is needed for all districts.

The most pressing questions awaiting solution are the following: The further coordination of the school medical work with the public health service; the physical condition of children under five years of age; the effective education of the dull or backward child; the importance of a comprehensive scheme for the treatment of dental defects; and the systematic organization of the teaching of hygiene and physical training. As for the care of children under five years of age, the report goes on to say, it may be safely assumed that from eighty to ninety per cent. of children are born healthy and with the potentiality of leading healthy lives. Whatever be the facts of parentage, the tendency of nature is to reassert the right of each new generation to the heritage of a healthy birth. The report further points out that after the first year of life the young child has to bear a heavy burden of environmental neglect associated with bad housing, poverty, and absence of hygienic supervision. As a result, the school medical service is faced with the hard issue, that out of an infant population born healthy, thirty-five to forty per cent. of the children admitted to school at five years of age bear with them physical defects which could have been prevented. The report asserts that attention in preschool days would give children a reasonable opportunity for proper education and would produce a great saving in subsequent medical supervision. It regrets that the institution of nursery schools has had to be curtailed.

The findings of medical inspection are summarized thus. Routine medical inspection finds that about forty per cent. of the children have a greater or less degree of physical defect. Definite malnutrition, heart disease, anemia, and deformities are each present in about two per cent. of the children. A larger burden of disease consists of: defective vision, twenty per cent.; ear, nose and throat diseases, fourteen per cent.; and a severe degree of dental disease, thirty-four per cent.

Secondary schools in England and Wales were examined last year. In the main the biggest number of defects were in the same proportion as in the elementary schools, but the fourth in the numerical list is deformities. The report referred to and quoted from is extremely valuable for purposes of comparison. In all civilized countries the condition of the children in the large cities have many features in common. The condition of English children is probably worse than that of other civilized countries because the population of England is mainly in towns and because England has been an industrial country longer than any other. But while such is the case, there are many industrial cities of this country where the conditions of life in the tenement districts rival, perhaps, in overcrowding and squalor any which may be found in England. The hopeful note which has pervaded the reports of the chief medical officer of the English Education Board shows that the efforts to improve the health of children have borne good fruit. The welfare workers and the medical department of the Education Board have already reaped a satisfactory harvest in return for their labors and the auguries are that their success in the future will be greater. What is most needed now in all great cities is that home environment should be improved. Unhygienic houses should be destroyed and replaced by roomy and well ventilated houses.

FOOD POISONING

On account of the large increase in recent years in the number of fatal cases from food poisoning, several of the leading public health journals have been printing warnings against certain types of food the consumption of which may lead to such poisoning. One of the best discussions of the subject forms the leading editorial in a recent issue of the *Monthly Bulletin* of the Boston Health Department. The writer, Francis H. Mahoney, Health Commissioner, believes that one of the reasons for this increase in cases of food poisoning is the fact that the war and the high prices left in its wake created a habit of conserving food sometimes not fit to eat. "A great deal of that which formerly went into garbage receptacles," he writes, "now find its way, in one form or another, into human stomachs."

One method of food poisoning is from contamination with mineral poisons resulting from the chemical action of certain foods on their containers. The habitual taking of copper salts may have a relation to the production of cirrhosis of the liver. The extensive use of arsenate of lead and poisonous solutions in spraying trees and crops sometimes results in making their products dangerous for consumption. Anaphylaxis, or protein sensitivity to certain kinds of food, often causes symptoms of food poisoning. These are gastrointestinal disorders, with or without urticaria, eczema, and nervous affections, such as migraine. Skin tests may help to confirm or discredit suspicion of anaphylaxis.

Qualities inherent in or acquired by foodstuffs may cause poisoning, for example mushroom poisoning and poisoning from cow's milk when the animal has eaten something of a contaminating nature. Food may also be contaminated by bacteria of certain types. Some of these do not produce symptoms of poisoning until after they have been introduced into the body and become active; others by their growth and activity in the food before it is eaten produce toxins which themselves cause poisoning when they are taken into the body with the food, irrespective of what the bacteria may themselves be capable of doing after entering the body. Most of the bacteria that produce food poisoning belong to the colon typhoid group. They include the Bacillus enteritidis, the Bacillus choleræ suis, the socalled hog cholera bacillus, and the paratyphoid bacillus. When food contaminated with these organisms is eaten, they cause in susceptible cases pronounced gastrointestinal disturbances, now regarded as frequently the result of the patient's being infected with the bacilli themselves, rather than the result of any "ptomaine" taken in with the food. That is, such symptoms are similar to those of the infection of a susceptible person with an acute infective disease.

One of the most serious, and of late one of the most frequent, forms of food poisoning is through the bacillus botulinus. The natural habitat of this bacillus is, like that of the tetanus, in the soil, preferably new soil. Also like the tetanus bacillus, it is harmful to man and animals only accidentally and under certain peculiar conditions. These dangerous possibilities manifest themselves chiefly through the effects of a toxin on the nervous system. The bacillus botulinus owes its name, which means the sausage bacillus, to the fact that it was first identified in connection with poisoning from eating sausages. The source of the bacilli was the imperfectly cleaned intestines of herbiverous animals of which the sausage skins were made. This bacillus is spore bearing and the spores are extremely resistant to heat. It is widespread in its distribution and likely to poison foodstuffs that may come in contact with the ground. A few years ago it achieved prominence by a number of deaths caused by eating canned ripe olives and spinach. Since then it has been found in home canned foodstuffs. It has caused also wholesale deaths of livestock that have eaten alfalfa in certain localities. Boiling thoroughly for forty minutes destroys the toxicity, but it takes at least six hours' boiling, and a higher temperature, if possible, to destroy the spores.

SOCIAL WORKERS AND VENEREAL DISEASE CLINICS

In a recent issue of *Health and Empire,* the official publication of the British National Council for Combating Venereal Diseases, Dorothy C. Hare, M.B., C.B.E., contributes a valuable discussion of the functions of social workers in connection with venereal disease clinics. The Trevethin Committee has recommended the employment of trained social workers on the staffs of clinics to teach patients and to give general advice and assistance when required in the following paragraph:

> As it is agreed that it is essential for the prevention of disease that there should be widespread knowledge among the community of the nature and consequences of these diseases, it follows that the importance of giving repeated personal instruction and warning to patients attending the clinics cannot be overstated. We think that this duty must always devolve mainly on the doctors, but that it might well be supplemented by trained social workers who for this purpose and that of giving advice and assistance should be attached to the staff of a clinic.

The writer discusses the various questions involved in such a step—theory, practice, and methods. The objection that the bond of secrecy under which the clinic works would be violated by the introduction of a social worker is answered by the fact that

the teaching, although individual, may be and should remain impersonal unless or until a personal application is given it by the patient and personal advice asked. Most patients will be just as desirous of protecting members of their families from infection and of knowing how to do it as patients suffering from other infectious diseases, and those medical officers of clinics that spend most of their time teaching their patients will be very ready to welcome assistance in the work. The time and energy of the doctor are limited, and his first duty is treatment, not instruction.

> Patients may be stupid or careless, and nothing but repeated telling will reach their understanding. More often they are ignorant and contending with circumstances under which the necessary steps to be taken to avoid the transfer of an infection and the carrying out of treatment are very difficult. From such the more leisured teacher will probably draw questions and a spontaneous request for advice.

In discussing methods of application of the principle, two questions are involved: How shall it be done, and by what type of persons? The latter involves the most important factor in the success of the work. The committee recommends the *trained* social worker. The task requires technical knowledge, knowledge of human nature, experience, and tact. "The worker must appreciate the difference between the precepts of health and of morality, and must be bound over to teach only the former when on duty in the clinic, and to refrain from inquiries of a personal nature, though showing a willingness to listen. Many patients will spontaneously present their personal difficulties to a sympathetic ear if these confidences are not directly sought." The worker and patient should be of the same sex.

The method of instruction will vary with the teacher, but it is suggested that the text of the teaching should be a printed paper which in all clinics is handed to the patient on first attendance. To read this through with the patient, underlining verbally the most important sentences, affords a good opening for discussion and question, or, if these are not forthcoming, the reading in itself is valuable. The worker should have some other function in the routine of the clinic which brings him or her into contact with all patients automatically, so that at later visits the acquaintance begun can be improved and further opportunities for instruction arise, perhaps on a hint from the doctor. Throughout, the advice of the doctor is necessary, and close cooperation with him, for successful work. "It is particularly necessary to combat the belief that circulates widely that negative reports, whether of blood reactions or films, mean a cure, and that from that day no further attendances are necessary. If this can be successfully done, a certain percentage of defaulting will be prevented." The scope of the work is probably wider for women than for men. The mother of a family who is infected or who has an infected child, or the young girl, must be instructed, not only in how to avoid infecting others, but often in difficult problems of bad housing conditions, occupation, and pregnancy. The child with gonorrhea is one of the greatest difficulties of the clinics, not only in regard to lengthy and difficult treatment, but also as to regular attendance at the clinics, and prevention of spread of infection. Domestic servants are particularly hampered in availing themselves of treatment. The work of following up defaulting patients by friendly letters could also devolve upon the social worker. In fact, in helping to solve or at least to mitigate the conditions involved in all of the above types of problems, the social worker's assistance would be invaluable *per se,* and could also be made exceedingly helpful to the physician, not only in saving his time and energy, but in carrying out his instructions.

BARRO COLORADO ISLAND RESEARCH LABORATORY

So much interest has been evinced by our readers in that portion of our Latin America news letters which refer to the opportunities for biological research in the tropics, that we have asked our Latin America correspondent to contribute a special article on the Barro Colorado Island Research Laboratory. The outlook of medicine has been so broadened in recent years that the physician and surgeon of today takes a greater interest than ever before in the progress which is being made in the allied branches of science. The location of the Barro Colorado Island in the centre of the Panama Canal Zone, makes it a place which is easy of access by all scientists: more than this, it affords a peculiar interest to every American who takes a patriotic pride in that greatest of all human accomplishments, The Panama Canal.

News Items

Speech Disorders.—The National Society for the Study and Correction of Speech Disorders will hold its annual meeting in Washington on July 4th and 5th.

Medical Unit Reviewed.—Surgeon General Ireland reviewed the 102d Medical Regiment of the New York National Guard at the state military camp at Peekskill.

National Board of Medical Examiners.—Examinations of students in Class A medical colleges were held in thirty-three cities and three R. O. T. C. Army Camps, June 19th to 21st.

Princeton Infirmary.—The cornerstone has been laid for the new infirmary at Princeton University, to be called the Isabella McCosh Infirmary, in memory of the wife of former President McCosh.

American Physicians Go to Vienna for Postgraduate Study.—Under the leadership of Dr. G. W. Mackenzie, of Philadelphia, fifty-two physicians from all parts of the country have sailed for Vienna for postgraduate work in otolaryngology.

Change in Name of Medical Journal.—*California and Western Medicine* is the new name of the *California State Journal of Medicine,* the official organ of the California, Nevada and Utah state medical associations.

Scientific Congress.—The third Pan-American Scientific Congress will be held at Lima, Peru, for two weeks, beginning November 16th. There are to be sections on medicine and sanitation and on biology and related sciences.

Infantile Paralysis Study.—Dr. Milton J. Rosenau, of Harvard, is studying the nature of the infantile paralysis bacillus, for which a grant of $12,000 a year for three years has been made by the Harvard Infantile Paralysis Commission.

Southern Physician Honored.—In recognition of the forty years' practice of Dr. Roger A. Mallory, in the small town of Concord, Georgia, its entire population held an old fashioned southern barbecue, attended also by about twenty-five physicians from the vicinity.

Shortage of Nurses.—A special meeting of the Philadelphia County Medical Association was recently called to consider the shortage of nurses. Dr. S. Lewis Ziegler of the society is chairman of a committee which has been making a six months' study of the subject.

Prize Essay Contest.—A prize of three hundred dollars is offered by the Fiske Fund of the Rhode Island Medical Society for the best essay on Recent Progress in Plastic Surgery. The winner of the 1923 contest, on the subject of treatment of neurosyphilis, was Dr. James Lincoln McCartney, Washington, D. C.

Buffalo Academy of Medicine.—Dr. Thew Wright, one of the two candidates for president of the Buffalo Academy of Medicine in a tie vote, withdrew his name for what he pronounced "the best interests of the Academy," to avoid the necessity of a special election. Dr. George R. Critchlow was then declared elected.

Training in Child Care.—A statewide campaign is being undertaken in Wisconsin to teach school girls how to care for little children. The work is under the direction of the State Board of Health and Vocational Education and the State Department of Public Instruction, with a fulltime organizer.

Philadelphia Medical Charity.—Fully half of the expenditures of 1923 for welfare activities in Philadelphia were devoted to medical charity, according to figures recently issued by the All Philadelphia Conference on Social Work. Hospitals and dispensaries received $10,662,000; extra institutional health service and sanitation, $1,251,000; physically handicapped, $776,000, and mental health, $2,716,000.

Research Prize.—In commemoration of Dr. Charles Lester Leonard, a martyr to the x ray, a prize of one thousand dollars has been offered by the American Röntgen Ray Society for the best piece of original research in the field of the röntgen ray, radium, or radioactivity. Papers are to be submitted not later than May 1, 1925, to Dr. George W. Grier, 8088 Jenkins Arcade, Pittsburgh, who is chairman of the committee.

Infant Mortality.—According to the annual report of the board of health of Hawaii, the infant mortality rate for the year ending June 30, 1923, was 139.92. Analysis of the figures showed a variation from 55.67 among the Caucasians, to 366.15 among the Filipinos. The Chicago Infant Welfare Society has found that the death rate among the eleven thousand babies it cares for is only one fourth that of the general infant death rate in the United States. Almost half the number of deaths among the children it cares for are due to respiratory infections, dependent to a large degree on general health measures.

Personals.—Dr. Frank Billings, of Chicago, has received the honorary degree of LL.D. from the University of Cincinnati.

Dr. Robert F. Sheehan has been appointed manager of the new Harlem Valley State Hospital, at Wingdale, New York.

Dr. Henry H. Forbes, professor of laryngology of the New York Post-Graduate Medical School, has gone to Europe to visit the Laryngological Clinics of Paris and the clinics of Professor Mourè in Bordeaux.

Dr. Herbert Acuff, of Knoxville, Tennessee, has been elected president of the Chamber of Commerce.

Medical Relief.—The sum of eight thousand dollars was expended during the year by the Association for the Relief of Needy Physicians of Central and Eastern Europe, according to its report of May 22, 1924.

Better Baby Conferences.—The state department of health of Illinois is arranging for thirty-two better baby conferences, to take place mainly in connection with the various county fairs.

Maryland Appropriations for Care of Insane.—The amount of $667,000 has been appropriated by the Maryland legislature for the state hospitals for insane and feebleminded patients. New buildings will be erected at all the state hospitals.

Hospital Changes Location.—The Samaritan Hospital of Brooklyn will sell its Bay Ridge property and locate permanently at the former Skene Sanitarium, President Street, Brooklyn. The medical staff recently held a meeting at the Brooklyn Chamber of Commerce, to celebrate the acquisition of this new property.

Hospital Campaign.—As the result of a week's canvassing by fifteen hundred volunteer workers, the Beth Israel Hospital of Newark has received pledges amounting to $1,853,000. The figure worked for is $2,000,000. The entire hospital is to be moved to new buildings on Lyons Avenue.

State Medical Society Meetings.—The Medical Society of New Jersey recently held its one hundred and fifty-eighth annual meeting. The following officers were elected: President, Dr. Alexander MacAlister, of Camden; vice-presidents, Dr. Archibald Mercer, of Newark, Dr. Lucius F. Donahue, of Bayonne, and Dr. James S. Green, of Elizabeth; corresponding secretary, Dr. William J. Carrington, of Atlantic City; recording secretary, Dr. John Bennett Morrison, of Newark; and treasurer, Dr. Elias J. Marsh, of Paterson.

The Rhode Island Medical Society has elected the following officers: President, Dr. William F. Barry, of Woonsocket; vice-presidents, Dr. Halsey DeWolf and Dr. Herbert G. Partridge, of Providence; treasurer, Dr. Jesse E. Mowry, of Providence; and secretary, Dr. James W. Leech, of Providence.

The Oregon State Medical Association has elected the following officers: Dr. Alfred C. Kinney, Astoria; president-elect, Dr. Paul F. Rockey, of Portland; vice-presidents, Dr. Ralph Fenton, of Portland, Dr. Leo B. Bouvy, of La Grande, and Dr. George E. Dix, of Marshfield; secretary, Dr. Courtland L. Booth; and treasurer, Dr. Ralph C. Walker, of Portland.

National Association Meetings.—The American Laryngolical, Rhinological and Otological Society has elected the following officers: President, Dr. William H. Haskin, New York; vice-presidents, Dr. Gordon Berry, Worcester, Massachusetts, Dr. Hugh M. Taylor, Jacksonville, Florida, Dr. George F. Keiper, Lafayette, Indiana, Dr. Don A. Vanderhoff, Colorado Springs, Colorado, and Dr. Edward C. Sewall, San Francisco; secretary, Dr. Robert L. Loughran, New York, and treasurer, Dr. Ewing W. Day, Pittsburgh.

The American Association of Genitourinary Surgeons has elected the following officers: President, Dr. Arthur L. Chute, Boston; vice-president, Dr. William F. Braasch, Rochester, Minnesota; and secretary-treasurer, Dr. Henry G. Bugbee, New York.

The National Tuberculosis Association has elected the following officers: President, Dr. Charles J. Hatfield, Philadelphia; honorary vice-president, Col. George E. Bushnell, U. S. Army, retired, Pasadena, California; vice-presidents, Dr. Walter Jarvis Barlow, Los Angeles, and Dr. Hoyt E. Dearholt, Milwaukee; secretary, Dr. George M. Kober, Washington, D. C. Dr. William H. Welch, Baltimore, Dr. Vincent Y. Bowditch, Boston, and Dr. Edward O. Otis, of Boston, were elected honorary members of the association.

The Association of American Teachers of Diseases of Children has elected Dr. Julius H. Hess, of Chicago, president, and Dr. Paul W. Emerson, Boston, secretary.

The following officers of the American Sanatorium Association were elected at its annual meeting: President, Dr. F. M. Pottenger, Monrovia, California; vice-president, Dr. David Lyman, Wallingford, Connecticut; and secretary-treasurer, Mr. W. L. Rathbun, Cassadaga, New York.

The Barro Colorado Island Research Laboratory

W. C. RUCKER, M.D.,
New Orleans, La.
Surgeon, U. S. Public Health Service

When Balboa made his famous transcontinental journey of discovery, the Isthmus of Panama was a thickly populated region. He left the shores of the Caribbean with 101 men, and in his journey to and from the Pacific Ocean, a journey which occupied more than three months, he was able to live off of the country. His men suffered none of the major diseases, and when he returned he had his full quota of men with him. It is extremely doubtful if such a feat could be accomplished today. Where once were thriving villages and farms, there are stretches of unbroken jungle. Anyone attempting to repeat Balboa's journey today would be likely to lose a considerable number of men from that malignant form of malaria known as Chagres fever, unless he was careful to administer daily prophylactic doses of quinine. But if he was an observing scientist he would have an unexcelled opportunity to study the flora and fauna of this region in an untouched state.

In the days which followed Balboa's expedition, tyranny, oppression and disease almost depopulated the area over which Balboa and his intrepid band traveled. He blazed the trail for an international highway which, after the disastrous efforts of the French and the successful endeavors of the North Americans, has now become a waterway for all the world. In the building of the Panama Canal a dam was erected at Gatun, and the waters of the Chagres River became Gatun Lake, the rising waters slowly inundating all lands above the eighty-five foot contour above sea level. Barro Colorado Island which formerly had been a large hill, was thus formed in the centre of an extensive area, which the rising waters slowly covered. Animals migrated to this island in advance of the gradually rising lake, and thus it became a refuge for practically every animal species in this district. It has remained practically undisturbed throughout the centuries and is now a virgin tropical forest in which the "balance of nature" is unmolested by human agency.

Fig. 1.—The worker at Barro Colorado Island finds much to interest him. Dr. Thomas Barbour, of the Museum of Comparative Zoology of Harvard University, and Mr. W. C. Brookes of the Boston Society of Natural History, are here shown with a large boa constrictor. At their feet is a three-toed anteater, *tomanduar tetradactyla chiringuensis allen*, which lives on the white ants or *termitis*. (Photograph by James Zetek).

The Island is situated in Gatun Lake, west of Frijoles, C. Z., with its west side bordering upon the Panama Canal prism through which pass daily the ships of all nations, bearing the representatives and the products of all peoples. It is approximately ten miles from Gatun and Gamboa, and covers about six square miles, being three and one half miles in each of its greatest diameters. Its shores are about eighty-five feet above sea level, and it reaches an elevation of 537 feet; completely wooded, excepting for a few hectares under cultivation on the southern shore, it is practically a virgin tropical forest. The number of species of plants thereon, exclusive of cryptograms, is about two thousand. Vertebrates are well represented, and opossum, sloths, anteaters, armadillos, peccary, deer, tapir, olingo, many species of rodents, tayra, agouti, squirrel, rabbits, raccoon, jaguars, pacas, coati, ocelot, bats, nightmonkeys, howling monkeys, whitethroated capuchin monkeys, spider monkeys, and other species typical of the humid lower tropical sun abound.

Barro Colorado Island thus presents wonderful opportunities, probably unexcelled in all the world, for research in biology, zoology, entomology and botany. Furthermore, it is well situated in the tropics, and is easily reached from all parts of the world. It is close enough to civilization, so that all of the necessities of civilized existence may be readily secured. Specimens may be easily shipped —in fact, it is the ideal location for a research laboratory. The project of the creation of such an institution was thoroughly considered by Dr. William Morton Wheeler, dean of Bussey Institution; Dr. Richard P. Strong, director of the School of Tropical Medicine of Harvard University; Prof. Charles C. Piper, agrostologist, U. S. Department of Agriculture, and Mr. James Zetek, specialist in tropical entomology, Bureau of Entomology, U. S.

Department of Agriculture, and on March 27, 1923, was presented to the Governor of the Panama Canal, Colonel J. J. Morrow, U. S. A. (retired). Under date of April 17, 1923, he set aside this Island as a natural park, and prohibited all hunting thereon. At once work was begun on a laboratory building. This is now completed, and consists of a well screened airy building, thirty-two by fifty-five feet, with a ten-foot screened veranda. It is equipped with excellent beds, kitchen equipment and dining room gear. There are shower baths and toilet facilities—in fact, everything which is necessary has been provided to carry on scientific research comfortably. The material for research is at the very door of the laboratory, and the scientist has only to walk a few feet into the jungle where something of scientific interest is happening every moment.

In previous letters the opportunity for studying ants, mosquitoes, other dipteras, bees, snakes, lizards, frogs, toads, mammals, and birds, have been dilated upon. The only thing necessary to round out the biological studies which may be made in this region, is a moving biological laboratory, and it is planned to create one in connection with the Gorgas Memorial Institute at Panama. In the regions easily reached from Barro Colorado Island, there is an opportunity for studying life in the arid lower tropical zone—in fact, from this point it is possible to make biological studies in every zone, from the humid lower tropical zone to the temperate zone.

FIG. 2.—The broad sabanas are frequently punctuated by the nests of the white ants, *amintermes medius*. They are grayish white in color, and almost as hard as stone. Frequently they are so thick that the field looks as though it were covered with Indian tepees. The one here shown is only medium sized. (Photograph by James Zetek).

FIG. 3.—Barro Colorado Island as here shown is in the centre of Gatun Lake, and before it runs the pathway of the world's shipping.

Contributions are being received for the expansion and continuance of the operations of Barro Colorado Island, and the chairman of the Executive Committee of the Institute for Research in Tropical America, whose address is, The National Research Council, Washington, D. C., will gladly receive any such. This article is not intended as a plea for these contributions, but it is felt that this is a matter of such importance and interest, that it would be lacking if the above information were not given.

The universities, museums, scientific societies and similar institutions of North America are sending workers to the Barro Colorado Island Research Laboratory, and it is believed that it will be possible here, not only to add greatly to the sum of human knowledge in the direction of pure science, but also to gain information which will be of the greatest practical value in the conquest of the tropics.

Foreign Correspondence

LONDON LETTER

(*From our own correspondent*)

LONDON, *May 20, 1924.*

CAUSES OF A C3 POPULATION

Dean Inge presided the other evening at a Chadwick public lecture given by Professor MacBride at the Royal Society of Arts, London. He said that the welfare of a nation did not depend on the amount of its imports or exports, but on the quality of the men and women composing it. The quality of a population depended partly on heredity and partly on environment. The importance of environment had been stressed, while the influence of heredity was neglected. Some people said that to study heredity was absurd, others said that it was contrary to religion, while some said that its effects were known already to all. Nowhere could they find recognition of the truth so uncompromising as in the Scriptures. "Do men gather grapes of thorns or figs of thistles?" If these words did not attach importance to the problem of heredity he did not know what words meant. He thought it was ridiculous to say there was anything contrary to the principles of Christianity in the study of the problems which Professor MacBride had investigated. Professor MacBride defined the phrase "C3 population" as a term to denote the physically and mentally deficient; C3 men were not "throwbacks" but products of imperfect development. The question of whether mental de-

ficiency was inherited had been settled in the affirmative by the researches of Dr. Goddard, an American, who had found that of 482 children of mentally defective parents whom he had examined 476 were defective. A C3 population was largely the result of reckless and improvident reproduction, the only remedy for which was in rigid birth control and eventual sterilization of the unfit.

The lecture referred to Terner's studies of goldfish, all the fancy breeds of which had been produced by the Chinese breeders from a grey carp by interbreeding monsters which were in turn produced by rearing the fish in water which was deficient in light and oxygen and was otherwise unsanitary, and his studies of frogs. His experiments, which were confirmed by a Dutchman, Dr. Jansen, tended to show that C3 human aberrations had a similar cause. Natural selection was the broom by means of which Nature kept other races of animals healthy and clean. If we interfered with its operation in the case of man, we must replace it with some other kind of selection, otherwise we should always be troubled with a "C3" population. Modern philanthropy by endeavoring to keep alive all children, however feeble, had only increased the evil.

NEW LABORATORIES AT CAMBRIDGE UNIVERSITY

Lord Balfour, as Chancellor of Cambridge University, opened on May 8th last the new Sir William Dunn Laboratories. These are a valuable addition to the resources of Cambridge University, making possible for the first time the concentration of the School of Biochemistry within one well equipped and thoroughly up to date building. The laboratories which are situated opposite Pembroke College were built by money left by Sir William Dunn for the "alleviation of human suffering" and which his trustees decided should be devoted to biochemistry. The executors recommended that out of his estate £210,000 should be set aside for this purpose. The actual building has cost about £96,000 and the laboratories are fully equipped. They were formally handed over to Lord Balfour.

Lord Balfour in his speech asked what could biochemistry do for mankind, which chemistry, especially organic chemistry, was not qualified to do already. He pointed out that biochemistry had a utility all its own. If one approached the subject from the side of chemistry alone one arrived at a number of very interesting truths, but one would certainly not arrive so quickly or so effectively at the truths, which that institution was designed to elucidate, as if one approached the subject with biological consideration in mind. The biologist and the chemist had, no doubt, part of their field in common, but unless that part of the field which affected physiology was approached from the chemical side with a biological basis secrets of nature would unquestionably remain hidden and the progress of mankind in knowledge would be indefinitely retarded. The trustees of the gift had had the wisdom to perceive that if human suffering was to be alleviated on a wide scale, action must be based upon theories deeply founded upon study and experiment. They had heard a great deal about the horrors of cancer, and he believed that the attempt to organize all the forces of research in alleviating this plague was of infinite moment to their future. But if he might hazard a conjecture, if the time was ever to come when the intimate causes of this scourge were discovered, and a flood of light thrown upon the detailed facts which generations of medical men had accumulated, it would be through some discovery made by a student who was not specially thinking of cancer or of any other morbid growth, but whose discovery would open up some generalization, some new way of looking at familiar facts, which would entirely illuminate this profoundly obscure but all important question. If that happened, they might assuredly and confidently believe that it would happen in some school of biochemical research, where students had devoted themselves with a pure love of knowledge to the penetration of the secrets of nature, and, if it did occur, why should it not occur in the building in which they were now assembled. He was confident that this great school, under the leadership of Professor Gowland Hopkins, and those who were working with him, would accomplish that which Sir William Dunn desired, and that his successor who spoke in this room would not merely touch on the hopes of the future, but would be able to point to a long and accumulating series of discoveries made by students of research.

TOLL OF INFLUENZA

The lowest birthrate in England and Wales in any first quarter except during the war period was recorded during the first three months of this year. According to the Registrar General's return, the births numbered 185,486, and were 7,049 more than in the preceding quarter, but 7,484 fewer than in the corresponding period of 1923. The deaths registered numbered 160,279 and were 45,495 more than in the preceding quarter, and 35,559 more than in the corresponding quarter of 1923. Influenza was stated to be either a primary or contributory cause of death in 12,604 cases. Measured by the proportion of deaths of infants under one year of age to births registered, the infant mortality was equal to 102 per thousand, this being 8 per thousand below the average of the ten preceding first quarters.

EMPIRE HEALTH CONGRESS

Mr. Wheatley, Minister of Health, opened at Wembley on May 12th an Imperial Social Hygiene Congress. The assembly was organized by the National Council for Combating Venereal Disease and was attended by delegates from all the British Dominions and Crown Colonies. There were also representatives from the American Social Hygiene Association. Mr. Wheatley said that as Minister of Health he attached great importance to the conference and was particularly pleased with its imperial character. Sir Leslie Mackenzie, member of the Scottish Board of Health, said the war revealed the necessity for treating venereal diseases as disabling diseases, and not as incidents in the ethical behavior of men and women. This would only be doing what had been done generations ago for tuberculosis and smallpox. In the eight years since the Venereal Disease Regulations were issued in Scotland probably more cases had been treated than in the previous thirty or forty years. They might say that roughly the total cases in 1920 were 20,400, with 208,000 attendances; in 1923, 22,800, with 290,000

attendances. In 1920 the new cases were roughly, 13,300; and in 1923, 12,400. It would be difficult to name any official order either in England or Scotland, that had been more fully justified by the results. Dame Rachel Cowdry, director of the Social Hygiene Section of the League of Nations, read a paper on The International Position with Regard to Prostitution and the Suppression of the Traffic in Women and Children. She explained that the league was primarily and officially concerned only with traffic in women and children. It could not concern itself with prostitution which was a domestic problem, except in so far as prostitution concerned the international traffic in women and children. Professor Winnifred Cullis, of the London School of Medicine for Women, urged that biology, in preference to chemistry and physics, should be taught in the elementary schools. She pointed out that the subject would be of value in the education for the prevention of venereal diseases. It was easy to make it interesting and link it with sociology. If taught to elementary scholars it could readily be continued with adolescents. It ought to be in the curriculum of the training colleges.

Sir Arthur Newsholme read a paper on Some Aspects of Social Hygiene, in which he made strong plea for the right teaching of sex hygiene, beginning with instruction in self control from infancy onwards. Miss Alison Neilans, secretary of the association for moral and social hygiene, said that we could do little by law and police, but must change public opinion.

GENEVA LETTER

(*From our own correspondent*)

GENEVA, *April 1, 1924.*

ANAPHYLACTIC PHENOMENA

Although the anaphylactic phenomena are at present well known, the mechanism causing their development is less so, and several theories have been brought forward to explain them. The most recent theory regards anaphylactic shock as resulting from rupture of the vagosympathetic balance and this interpretation accords with a case recently observed by Dr. R. Lavielle. The patient, a female of twenty-three years, was suddenly seized on April 2, 1923, with a series of very impressive disturbances. She complained of violent colic and severe headache, while at the same time uncontrollable vomiting in closely repeated paroxysms occurred. The body was covered with a pruriginous exanthema, especially marked on the trunk and upper limbs, while the eyelids were the seat of such edema that the patient could not raise them. The history showed that on the day these morbid phenomena developed the menses had begun, and regardless of this fact the patient had taken a cold plunge in a pond. Under the influence of chilling, the menses ceased shortly after the development of the anaphylactic crisis. It is to be noted that the patient had previously had attacks of urticaria after ingestion of fish and strawberries. Given these data, an emmenagogue indication was exhibited, and in a few hours the menses recurred while at the same time most of the symptoms of shock retrogressed and only the edema of the lids and face were slow to subside although it had disappeared by the next day.

This typical anaphylactic crisis is merely interesting on account of its coexistence with the suppression of the ovarian functions. The absorption of blood consequent upon the arrest of the mensual flux, does not seem to be the cause of the crisis since, in the circumstances, the albumin entering the organism was not heterogeneous. On the one hand, if the close relationship existing between the sympathetic system and the endocrine glands—especially the ovary—be considered, as well as the short duration of the anaphylactic crisis and its brutal outburst, it seems logical to suppose that it was due to a reflex having multiple manifestations indicating a sudden disequilibrium of the vagosympathetic system.

SERUM ACCIDENTS

Dr. R. Clenet recently reported to the Société Médicale du Nord a curious case of serum accidents. The patient, a male, aged fifty-seven years, arteriosclerotic, with high blood pressure for many years, and presenting some azotemia, cut his finger slightly. The wound was dressed and an injection of antitetanic serum given. A few days later the patient was suddenly seized with a feeling of malaise in the night, and found that his head was badly swollen, especially the eyelids and lips. There was also some edema of the neck and the patient complained of a feeling of constriction at the throat with dyspnea and dysphagia. On the following day the swelling had somewhat subsided, but the edema had extended to the thorax and upper limbs. The body was covered with urticaria, the pain in the limbs was intense, there was anuria, and on the whole the general condition was bad. Two days later these symptoms retrogressed and recovery took place slowly.

Dr. Clenet pointed out that such severe symptoms were uncommon and recalled the fact that during the war while millions of antitetanic injections were given untoward accidents were uncommon and fleeting. This was probably due to the youth of the subjects and their general good physical condition. In older subjects, one must be prudent.

In the discussion which followed, Dr. Breton reported several similar cases and thought that their greater frequency at present was due to the greater freshness of the serum and because it was heated at 56° C. for a shorter time. Dr. Bloum mentioned an interesting case of a soldier in whom serious accidents occurred following the reinjection of antidiphtheritic serum and their immediate disappearance following a second injection of the same serum given at once. Finally, Dr. Descarpentries recalled that edema from serotherapy subsided rapidly when a few cubic centimetres of the patient's serum were injected.

VACCINATION LAWS VIOLATED

Not long ago, the Zurich police fined some six hundred persons for not having observed the law formulated by the Sanitary Commission of the city relating to vaccination. The court sustained the findings of the police and fined each person sixty francs (twelve dollars). The court also was affirmative in respect to the question, namely, if the Federal Council had the right to impose vaccination in case of epidemics of smallpox.

PERIARTERIAL SYMPATHECTOMY

A recent meeting of the Bordeaux Medical and Surgical Society was given up to the discussion of periarterial sympathectomy. Dr. Bardan and Dr. Mathey-Cornat reported twelve cases of old complicated ulcers in which this operation was done, as they had resisted all other therapeutic measures, even resection of the saphenous vein. The patients varied in age from fifty-three to sixty-nine years. The ulcers healed rapidly—in from six to forty-seven days, according to their size—after sympathectomy with a secondary vasodilatation verified by a series of local temperature charts, blood pressure, etc. Functional recuperation was satisfactory. These results led to the conclusion that periarterial sympathectomy is indicated in varicose ulcers combined with total saphenectomy. As to the ultimate outcome of these cases, a certain reserve must be made, although Dr. Charbonnel stated that he had had recoveries which had been permanent for two or three years. But he said that it must not be forgotten that these subjects often are arteriosclerotic so that the veins tear easily during operation. And more important still, the lymphatics were injected in these cases so that there was a possibility of the development of phlegmonous processes. Dr. Moulinier then pointed out that when arteritis existed in these cases, the results of sympathectomy would be *nil*.

In closing the discussion, Bardan and Mathey-Cornat showed that in some instances of failure following periarterial sympathectomy, this was due to errors in diagnosis and in support of this they referred to the case of a man, aged sixty-four years, who was submitted to femoral sympathectomy at the apex of Scarpa's triangle with transitory improvement lasting only a week. This failure was due to the fact that the case was in reality a thrombosis of the superficial and deep femorals.

TREATMENT OF MUMPS

The prophylactic treatment of mumps was the subject of an interesting paper read before the Paris Society of Therapeutics, by Dr. A. Challamel. The cases reported were closely followed and prove that incubation lasts for twenty days, that the phase of contagiousness must be extremely short, and that contagion of healthy subjects in most instances occurs during a few hours preceding the prodromal symptoms of the process. Hence, from the viewpoint of prophylaxis, as soon as a case of mumps develops, the subject who was in contact with the patient on the day before the latter manifested his symptoms, should be isolated rather than the patient himself. The isolation of suspected person on the nineteenth day following exposure would appear to be the only means of extinguishing a commencing epidemic.

MENINGOCOCCAL INFECTIONS

An important communication was made last fall to the French Congress of Medicine, by Dr. Dopfer, on the treatment of meningococcal infections. This eminent clinician stated that polyvalent serum should be injected before the results of the laboratory have been received. When the microbe has been determined a serum corresponding with the A, B, or C meningococcus should then be used, according to the organism identified in the laboratory. The serum should be given early and in massive doses, even in young children, and are to be repeated for several successive days.

This is the rule to follow: First give a polyvalent injection, then remove some cerebrospinal fluid for direct examination and culture. When the causative bacterium is identified, a corresponding serum is used. An apparent recovery should cause the injections to be stopped, upon condition that they are to be begun again should any of the symptoms recur. When recovery is delayed serotherapy is to be continued. Should a serum meningitis ensue, serotherapy must be stopped, and repeated lumbar puncture made. The serum should be injected both subcutaneously and in the spinal canal, the subcutaneous route being used to deal with the septicemia.

Vaccinotherapy is especially useful in cases where serotherapy does not seem to control the symptoms and autovaccines are to be preferred. Although its manner of action remains obscure, fixation abscess is an excellent adjuvant to treatment.

WASHINGTON LETTER

(*From our own correspondent*)

Washigton, *D. C., June 12, 1924.*

BRITTEN PERSONNEL BILL

At the conclusion of hearings before the House naval committee on the bill recommended by the Navy Department for equalization of promotion of staff officers with respect to those of the line, Representative Britten of that committee, introduced a bill of his own on that subject. His bill provides, so far as the Medical Corps of the Navy is concerned: one officer with the rank of rear admiral, thirty with the rank of captain, and sixty with the rank of commander. Mr. Britten states, in explanation of his bill, that he is convinced, as a result of the hearings before the naval committee on the equalization bill, that there are too many rear admirals and captains in the various staff corps, and that his bill gives each staff corps what he considers to be its required number of rear admirals, captains and commanders for the specific duties they are called upon to perform.

VERNAL HAY FEVER

The season for vernal hay fever, the less common but perhaps the more distressing type, has opened in Washington earlier than usual because of the cool weather, according to members of the medical staff in charge of the hay fever clinic maintained by the Woman's Welfare Association. Cool weather, it is stated, promotes rather than retards the flowering of the grasses, whose pollen grains, floating in the air in enormous quantities, cause periodic distress to hundreds of sufferers. Sweet vernal grass is in full bloom; others will follow in steady succession, extending the period of symptoms until the middle of July.

RITES FOR MRS. WORK

Funeral services for Mrs. Laura M. Work, wife of Dr. Hubert M. Work, former president of the American Medical Association, and at present the Secretary of the Interior, were held in the east room of the White House Monday, May 12, 1924, at 2

o'clock. Mrs. Work died Friday, May 9th, after an attack of heart disease. Original plans were for holding the obsequies in Secretary Work's apartment in Wardman Park Hotel, but use of the executive mansion, which in the past has rarely been the scene of final rites for any but Presidents and members of their immediate families, was tendered to the Secretary by President Coolidge. The Rev. Dr. Wallace Radcliffe, pastor emeritus of the New York Avenue Presbyterian Church, of which Mrs. Work was a member, conducted the services. Burial was in Arlington National Cemetery. On only three previous occasions has the east room of the White House been used for similar funerals.

WANTS POTOMAC WATER SAFE

Urgent need that the sanitary and drainage projects of the larger park areas be completed and that other work to be done to prevent the pollution of local streams and in the interest of sanitation was recommended in a report submitted by the sewage committee of the Board of Trade May 26, 1924. The civic body's executive committee voted to have the recommendations placed before Congress. Very little progress has been made since 1920, it was reported, towards the completion of the park sanitary work, which was originally recommended by the District sanitary enginee fifteen years ago. This relates to the sewerage and drainage systems of the great park areas such as the Upper Potomac, Rock Creek and Anacostia. The urban development in what is now known at Arlington County, was pointed out in the report. This area is in contact with the District for nearly six miles along the Potomac waterfront, and its population is said to be rapidly increasing, and as it is planned to install both water supply and sewerage, the Potomac will receive large bodies of sewage waters. There are many matters of sanitation in the city proper requiring attention, the committee said, including Piney Branch, in the Piney Branch Parkway between Rock Creek and Sixteenth Street. With the development of that section the sewerage system has become wholly inadequate, the report said. Although the appropriations allotted in recent years for sewerage have been larger in the aggregate, the sums allotted for the primary work of the great park areas have been materially less, the report stated.

CITATIONS FOR GALLANTRY

The following medical officer now in duty in Washington, as announced by the War Department, is cited for gallantry in action, and two stars will be placed upon the ribbon of the Philippine campaign medal awarded to him: Lieut. Col. Robert U. Patterson, Medical Corps, then first lieutenant. Action against insurgent forces at Fort Bacolod, Mindanao, April 8, 1903, and against hostile Moros at Fort Pitacus, Taraca River, Lake Lanao, Mindanao, May 4, 1903.

The following medical officers are cited for gallantry in action and a star will be placed upon the ribbon of the Philippine campaign: Brig. Gen. Walter D. McCaw, Medical Corps (one star), then major, United States Volunteers. Action against Spanish forces, Santiago, July 1, 1898. Col. Thomas J. Kirkpatrick, Medical Corps, retired (one star), then first lieutenant.

COMMISSIONS ACCEPTED IN THE RESERVE

Dr. Charles Ignatius Griffith, 1371 Monroe Street, Northwest, as a major in the Medical Corps, and Dr. Judge Ward Mankin, 3311 Thirteenth Street, Northwest, as a captain in the Medical Corps.

CHLORINE GAS FOR COLDS

Considerable interest attaches to the President's experiment with chlorine gas as a cure for the very severe cold from which he was suffering. A few hours before the President underwent the treatment, Secretary Weeks journeyed to the Munitions Building for the same purpose and it was at his suggestion that Mr. Coolidge underwent the treatment. Secretary Weeks took the gas some time ago, but under adverse conditions, as it was administered in his office. The Secretary and President are not the first in official life who have submitted to the treatment. Many Senators and Representatives have reported benefits from its use, and at the Capitol there is a chamber where several receive daily treatment. President Coolidge sat for fifty minutes in an airtight chamber and chatted (?) and read while atmosphere around him was being charged with the gas. With the President during the time was Lieut. Col. M. A. De Laney, Medical Corps, United States Army, who was in charge of the apparatus which releases the vapor.

POPULAR LECTURES ON PSYCHOLOGY

Under the auspices of the Washington Psychological Society and the Woman's Welfare Clinic, a psychological seminar on mind and health will be given by Dr. Tom A. Williams in the home of the Rev. Robert Johnston, rector of St. John's Episcopal Church, at 1754 Massachusetts Avenue. The lectures will be given every other day for a period of six days. Subjects of the lectures are as follows: First, perception, conception, affection and emotion in relation to the function of the nervous system; second, morbid delirium and the nature of hallucination and false interpretation; third, suggestion, inclination, prejudice and morbid trend; fourth, emotional perversions of fear, disgust, hate, jealousy, love and impulsion; fifth, motivation, nature of mind, fallacies about unconscious cerebration; sixth, discussion of various psychopathological theories.

FOOD POISONING OUTBREAK

Analysis of samples of the food which was suspected to have caused the sickness of students of the Dunbar and Armstrong schools has failed to indicate any cause for the illness, Dr. William C. Fowler, District Health Officer, announced May 27, 1924. A thorough bacteriological analysis both of the cooked and raw food was made by Dr. J. E. Noble and Dr. W. F. Landon, of the health office. An autopsy on a rat caught in the store where the suspected food was found, failed to throw light on the cause of the outbreak. All the students have recovered.

THIRTEEN NURSES GRADUATED

Thirteen young women who have finished their course at the Georgetown University Hospital Training School for Nurses received their diplomas at commencement exercises at 4:30 o'clock on the afternoon of May 25, 1924, in Gaston Hall, Georgetown College.

Book Reviews

DISEASES OF THE RESPIRATORY ORGANS

Precis de Pathologie Médicale. Tome II, Maladies de l'Appareil Respiratoire. FERNAND BEZANCON and S. I. DE JONG. Paris: Masson et Cie., 1923. Pp. 566.

Of the six volumes which are destined to replace Dieulafoy's well known textbooks on internal medicine, which were the guides of students and practitioners for two generations, the second volume, which treats of respiratory disease has just appeared. The authors, Professor Bezancon and Dr. de Jong, are well known authorities on the subject and distinguished for their studies, researches and publications on respiratory diseases. In this volume they have condensed their numerous essays on this subject and at the same time discussed classical facts and the works of other recent investigators.

After devoting a number of pages to the anatomy, physiology and pathology of the respiratory organs, the authors discuss the clinical aspect of diseases of the respiratory apparatus, such as bronchitis, bronchiectasis, asthma and emphysema, which have been the subject of their special attention and study during the last few years. Various forms of tuberculosis, such as the infant type, the glandular tuberculosis of childhood, the various aspects of the disease in adult life, pleurisy, pneumothorax, mediastinal involvement and trachiobronchial complications, are treated in a thorough manner. Numerous illustrations add to the clearness of the description of the pathological and clinical conditions in the various diseases. As a whole, the authors have presented a most valuable up to date textbook on respiratory diseases and are to be congratulated on the concise and practical way in which they have done their work.

TUBERCULOSIS FROM THE PATIENT'S VIEWPOINT

Tuberculosis. A Primer and Philosophy for Patient and Public. By MCDUGALD MCLEAN, B.A., B.Sc. (Oxford), M.D., (Johns Hopkins). Second Edition. New York: Journal of the Outdoor Life, 1924. Pp. 162.

It is always interesting to read a book on tuberculosis written by a tuberculous patient, and if the author of it is at the same time a physician it is doubly interesting. Unfortunately, the brilliant author, who made a valiant fight against tuberculosis, succumbed to the disease before the second edition saw the light of day. The first chapter deals with various methods of infection, and in their enumeration one little criticism might be justified inasmuch as the author does not call any attention to the infection by bacilliferous saliva. It is well known that children have frequently become infected by the kiss of a tuberculous individual or by a tuberculous mother testing the milk through the rubber nipple or the gruel with the same spoon used for the infant.

The description of the bacillus and the course of the disease are made lucid and interesting to the lay mind. The chapter on symptoms is very wisely headed as Danger Signals and is preceded by the words "Let thine ear now be attentive, and thine eyes open." The author makes a very just criticism of the habit of laymen, especially "ex-t.b.'s," of giving advice to tuberculous patients. In the chapter on Morale, he quotes William James on *Religion and Philosophy,* who said that we should "cultivate and practice a religion of healthy mindedness, courage, patience, optimism and reverence," to which might be added selfcontrol. In the chapter on climate, the author gives the present views which are to the effect that the climate is of less importance than the mode of life. A strong and always necessary plea is made for the abandonment of patent medicines and an equally strong protest is made against phthisiophobia.

The short biographical notes of "distinguished t. b.'s" are interesting and the author justly starts with Trudeau as the best known American. He then mentions Robert Louis Stevenson, Trudeau's most illustrious patient; the two great French clinicians and pathologists, Laennec and Grancher; the German poet, Schiller; the two German physicians who have done so much for the promulgation of the sanatorium idea, Brehmer and Dettweiler; and other less known but equally brave tuberculous patients who finally succumbed to the disease. It is regrettable that this young and brilliant author had so short a career as a teacher to laymen and physicians. May his little volume continue to be a comfort and inspiration to the tuberculous sufferer.

LARYNGEAL TUBERCULOSIS

Tuberculosis of the Larynx. Ten Years' Experience in a Sanatorium. By Sir St. Clair Thomson, M.D., F.C.R.P., F.R.C.S. London: Published by His Majesty's Stationery Office, 1924.

St. Clair Thomson's studies and statistics are based on observation of nearly three thousand cases in the King Edward VII Sanatorium, Midhurst. The numerical analysis and the teaching, as well, are applied to the various questions which arise in the etiology, symptomatology, diagnosis, treatment and prognosis of laryngeal tuberculosis. There is a detailed comparison of results seen in the three special methods of treatment by absolute silence, by whispers, and by galvanic cauterization, respectively. Short chapters are devoted to observations on tracheotomy, tuberculous otitis media, tuberculosis of the tongue, glands and scars of the neck, differentiation from syphilis, cancer, and aspergillosis of the larynx. The drawings, of which there are many, were prepared from sketches and descriptions made directly by the author. With the case histories, they are most interesting and instructive, but unfortunately rather coarsely and indistinctly reproduced.

SURGERY OF THE EAR

Chirurgie de l'Oreille, du Nez, du Pharynx et du Larynx. GEORGES LAURENS. Deuxieme édition, entièrement refondue, avec 792 figures dans le texte. Paris: Masson et Cie., 1924.

This, the second edition of Laurens's monumental treatise, is virtually a new work, inasmuch as many chapters have been rewritten, many added to, and the whole richly and, what is more, most instructively and clearly illustrated. Each operation in this wide field is described in detail with its indications, its technic and its sequelæ; at times, when required, by

a sketch of the topographical anatomy also. Among accessory procedures which are treated with care in detail, we note illumination, local anesthesia, and hemostasis of the operative field. Aftertreatment, too, is considered briefly. The importance of the visual factor in teaching has duly impressed the author who has accompanied and enriched his text with diagrams, schematic drawings, and a large number of reproductions of photographs. The completeness with which the field has been covered may be noted in the fact that the surgery of all the intracranial complications of otitis, the operations on the facial nerve, the esophagus, and on tumors of the cerebellopontine angle and of the acoustic nerve, are included. A monumental work, indeed.

MASTOID OPERATION

Handbuch der Speziellen Chirurgie des Ohres und der Oberen Luftwege. Herausgegeben von San.-Rat. Dr. L. Katz, Ludwigshafen a. Rh., und Prof. Dr. F. Blumenfeld, Wiesbaden. Radikale Freilegung der Mittelohrraeume (Radikaloperation oder Total aufmeisselung). II Band., Lieferung 9. Leipzig: Curt Kabitzsch, 1923.

This issue of the Katz-Blumenfeld Handbook deals, as indicated in the title, with the radical mastoid operation. The chapter was started by Preysing, and finished by Beyer. The field covered may be shown by a résumé of some items from the table of contents. There is a short historical survey of the development of the operation, and the indications for its performance in mastoiditis with and without subperiosteal abscess, in facial paralysis, tumors, progressive bone necrosis or cholesteatoma, suppuration involving the inner ear, sinus, or dura, and in borderline cases as a prophylactic, preventive measure. There are instructive chapters on the topographic anatomy of the attic and of the medial wall of the tympanic cavity. The technical details of the radical operation are given at length and with great care, the procedures of various authorities being described. There are many illustrations of uneven merit. Some of the colored plates, notably those representing various plastic operations, are beautiful and instructive. The whole work shows characteristic German thoroughness and care and a gratifying, because less characterstic, recognition of the work of otologists outside of Germany, notably those of France, England and America.

BIOLOGICAL RESEARCH

Handbuch der biologischen Arbeitsmethoden. Unter Mitarbeit von 500 bedeutenden Fachmännern, herausgegeben von Geh. Med.-Rat. Prof. Dr. Emil Abderhalden. Abt. XII, Methoden zur Erforschung der Leistungen von einzelligen Lebewesen, Heft. 2. Spezielle Methoden. Berlin und Wien: Urban & Schwarzenberg, 1924. Pp. 299-460.

In this number, Ernst G. Pringsheim discusses the technic of the stimulation experiments on unicellular organisms, including the subjects of phototaxis, thermotaxis, geotaxis, chemotaxis and aerotaxis. Paul Buchner takes up the subject of the intracellular symbiosis of animals with vegetable microorganisms. Stefania Lichtenstien treats of the methods of studying microorganisms in microscopical specimens and their methods of preparation and their methods of staining. This work is valuable to the laboratory technician.

DISORDERS OF DIGESTION

Treatment of Common Disorders of Digestion. By John L. Kantor, Ph.D., M.D. St. Louis: C. V. Mosby Company, 1924.

This book contains approximately two hundred and fifty pages devoted to the treatment of digestive disorders. In style, it is clear, concise and much to the point. It is presented in such a way as to carry the reader along step by step in the development of the therapeutics for various forms of indigestion, always giving the reason for the adoption of such measures as are recommended. X ray illustrations are given, especially for ptosis, delayed gastric emptying, atonic constipation, spastic constipation and dyschezia, which are very instructive. The treatment of ulcer is presented in an excellent manner. The book is well worth reading by any physician interested in the subject of gastroenterology.

FORENSIC PSYCHIATRY

Insanity and the Law. A Treatise on Forensic Psychiatry. By H. Douglas Singer, M.D., M.R.C.P. (London) and William O. Krohn, A.M., M.D., Ph.D. Philadelphia: P. Blakiston's Son and Company, 1924. Pp. 437.

This is a most timely book. Its aim is a presentation of the medical in relation to the legal phases of insanity. A quantity of pertinent material is presented which elucidates the intricate interrelationship which exists and the need for close cooperation between physician and lawmaker clearly emphasized. Many phases of insanity are discussed, mainly from a legal point of view, and the case material shown is well chosen. From this point of view the book fulfills its function admirably.

THE CONSCIOUS FACULTIES

Vom Wesen des Bewusstseins. Aus einer Lebenswissenschaftlichen Vorlesung. Von Dr. Ludwig Klages. Leipzig: Johann Ambrosius Barth, 1921. Pp. VI, 94.

This small volume will not appeal to a large class of readers but it will repay the thoughtful student. The latter will find his thought quickened to a new interest in the never ending consideration of the nature of consciousness, of the life which it represents, of the reality of those things by which life is surrounded or in which it represents itself, whether this reality is an actual one or has to do only with appearances and interpretations. Klages reviews and rejects the classical doctrines which have engaged psychological and philosophical thinkers in order to formulate his theory. He arrives at this through a careful examination of the activities and characteristics by which consciousness may be known. He treats each step with a careful, detailed penetration. He brings to bear upon his discussion the illustrative material of a cultural knowledge which furnishes him with a rich background on which to build his own theory. His own strong metaphysical tendency leads him, however, into a final solution which departs from the clearness of the facts by which he has in part at least supported his way. He looks toward a realm of investigation where the nature of life may be sought differently than in this vale of causal facts where it is necessary to tarry during an era of science. His solution already reflects the light that radiates upon him from this region but the simple facts of the humble causal territory are obscured by it. To him the connection of the soul with the body

is that of "the sense [das Sinnes] with the appearance of the sense." All that appears has a soul, which is known in the image of the thing. Everything lives, possessing this soul. He sees beyond consciousness, as its source, a fundamental spirit. The ego is the personally acting individual, the bearer of consciousness. Its body performs a practical function, that of receiving impressions from the external world and of reacting to these. The book is of interest as a manifestation of the direction of thought of this man of insight and of culture. Its style and its high aim in the search after the nature of life will hold the careful reader's attention.

VACCINE THERAPY

A Physician's Manual of Vaccine Therapy. By G. H. Sherman, M.D. Detroit: Press of the Bacteriological Laboratories of G. H. Sherman, 1924. Pp. 160.

This little book purports, so the preface states, to give in a concise comprehensive manner such facts and data as are pertinent to the application of bacterial vaccine therapy in the prophylaxis and treatment of infectious disease. "The facts and data given are the result of seventeen years of study and specialized effort, in addition to a great deal of research work and also clinical investigation carried on in hospitals, sanitoria, etc."

The volume opens with a chapter on vaccination in general, followed by a second outlining bacteriological information for the special use of the practitioner who wants this information in the briefest and most readily usable form. The portion of the book which gives it the title of a manual follows, with its data arranged alphabetically under the name of the disease, with cross references where necessary. Each entry, as, for instance, *asthma,* includes a brief outline of causation, nature of the disease, bacteria involved, and outline of treatment by vaccines. The appendix to the volume consists of quotations from the literature of the subject.

ANATOMY AND PHYSIOLOGY FOR CHILDREN

How Our Bodies Are Made. By R. M. Wilson, M.B., Ch.B. London: Henry Frowde and Hodder & Stoughton, 1923. Pp. 246.

To interest children in personal hygiene and furnish them with sufficient and proper physiological information to make them realize the significance of healthy habits of living, is a most important yet often difficult problem. The author of *How Our Bodies Are Made* has gone quite a distance toward solving this problem. He has put before us in his book descriptions of bodily functions in a very simple yet most attractive manner, and the story is told so entertainingly that any normally intelligent child could hardly fail to be interested in it. The use of analogies to help explain certain processes difficult to describe to children is very cleverly carried out, not only in the text but also in the numerous and excellent illustrations. For instance, the chapter called "The Hardest Worker in the World" is about the heart and its action; the "Soldiers at the Gate" are the teeth; "Red Submarines and White," the blood; "The Ruler" is the brain, etc. The chapter on the subject of sex, proper instruction in which has been the centre of so much controversy, is excellent. The explanation of cells and cellular structure which accompanies it is quite remarkable in that it is so simple that even a young child could easily understand it, yet it covers practically the whole ground as a description of cells, cell division, and final development in a complex organism.

FAMILY AND MONEY

Maestro Don Gesualdo. By Giovanni Verga. Translated by D. H. Lawrence. New York: Thomas Seltzer, 1924.

Anyone familiar with the Italian temperament, the intense rapidfire of thoughts, actions, emotions, will find in this novel of Verga's a faithful delineation of national characteristics. Add to this a human story and you have as readable a work of fiction as could be desired. The author has skilfully tuned the action of the piece into an instrument of style. Atmosphere is at the same time part of the tale's construction, just as it is in real life in Italy.

A man by dint of much striving succeeds. He pushes on and on in spite of his lowly origin. He allies himself to a leading family and the struggle between high and low wages back and forth. In no recent book of our acquaintance has the national family complex been so clearly shown, with the ruin attending its tyrannical sway. Maestro Don Gesualdo mounts upward until he is in sight of the twin gods, family and money. As soon as he tries to reach out for them, his descent begins. Once fired with this ambition, there is no cure. He falls and falls to the lowest depths, dependence, sordid death.

PSYCHOANALYSTS

Psychoanalysts Analyzed. By P. McBride, M.D. London: William Heinemann Medical Books, Ltd., 1924.

The author of this little lavender collection of clippings is serious enough to be the author of a comic serial. He believes the intestines are of greater import than the intellect. The arguments put forth are so puny that they are unworthy of the steel of even a tyro in psychoanalysis. A few of the author's dreams are cited, which strongly suggest impotence and senility.

Medicoliterary Notes.

Citizens of Brussels spending the summer at home may find the illusion of coolness at least by attending the new opera *Kaddara* being presented there at the Théâtre de la Monnaie. The scene of *Kaddara* is laid in Greenland and the characters are Eskimos. The composer is Haakon Borreson, a Norwegian. A French translation is being presented in Brussels.

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A recent study made by the U. S. Public Health Service of the extent of rural health service in this country and published in *Public Health Reports* for May 16th, shows that over eighty-seven per cent. of our rural population are as yet unprovided with health service approaching adequacy. Provision for this would mean a financial saving as well as the prevention of much mental and physical suffering and much unnecessary loss of human life.

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The British Labor Government's political organ, the London *Daily Herald,* has recently published a table of the proportionate time absorbed by man's daily activities in a lifetime of seventy years. The statistician has estimated these as follows: sleep, twenty-three years; sickness, one and one-half years; eating, three years; washing, shaving and dressing, two and one-quarter years; school, one and

one-quarter years; work, eighteen years; reading, seven years; play, one and three-quarter years; entertainments, etc., one-half year; walking, trains, etc., two and one-quarter years; waiting for trains fifteen days; sweethearting, sixty days; idling, two and one-half years; sundries, seven years.

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Juno and the Paycock is the diverting title of a new play now being presented at the Abbey Theatre in Dublin, and which, it is rumored, may be produced in the United States next season. The author is Mr. Sean O'Casey. His play is described as an extraordinary mixture of light comedy verging upon farce, with an undercurrent of bitter tragedy. However, there is an ending happy enough to please even Polyanna.

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The Health Book is the name of a sizeable volume by Royal S. Copeland, M.D., recently published by Harcourt, Brace & Co. The author states in his preface that the purpose of his book is "to tell in simple language how to relieve pain and what to do to prevent or to cure some of the many ailments which are liable to invade every home. I shall hope to explain how to meet the simple accidents, the sudden emergencies of factory, farm, and household, which are sometimes appalling if you don't know what to do," he tells us.

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Colonic Therapy in the Treatment of Disease is the subject discussed by O. Boto Schellberg in a volume recently issued by the American Institute of Medicine. Some of the chapter headings are: The evolution of the alimentary canal; intestinal bacteria; anatomy and physiology of the intestine; relation of colonic pathology to systemic infection; the futile enema; technic of colonic irrigation; antiseptics and bacterial implantations; fecal stasis and its consequences; the human machine.

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A recent issue of the *Living Age* quotes from the *North China Herald* the following amusing item: Missionaries who were motoring recently through Tondo, a district of Manila, in which there are many small Filipino and Chinese shops, were surprised to see the word "dammit" on several signboards. One of the women of the party expressed astonishment that the Filipinos had adopted English profanity to **such an extent as to use it** in their signs. It was then explained that "dammit" means clothing in the Tagalog dialect!

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The May issue of *Better Eyesight,* the small monthly devoted to the prevention and cure of imperfect sight without glasses, contains a number of interesting contributions. Among these are *Conical Cornea,* by Dr. W. H. Bates, editor; *Stories from the Clinic,* by Emily C. Lierman, and the *Mind's Eye,* by Edith McNamara.

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Dr. Trinidad de Tavera, director of the National Library and Museum, attracted considerable attention by expressing in the course of a recent lecture at Manila University the opinion that the Lord's Prayer is one of the curses of thte Philippines. He said the prayer taught the people to pray for their daily bread, and so encouraged them to trust to luck rather than to their brain and brawn. He also considered the coconut palm a curse because it tempted the owner. to bask in idleness. He advised the people to seek an example, not in Solomon's ant, but in their diligent Chinese neighbors.—*Living Age.*

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Eyes and Their Future is the title of an article contributed by E. E. Fournier d'Albe to *The Nation and the Athenaeum of London.* The writer believes that, since light is an electrical phenomenon which will be transmitted along a wire when the question of suitable transformation is solved, in the future, distance, darkness, fog, and other intervening obstacles will lose most of their power of limiting vision. "The man of the twenty-first century will be able to sit at home and turn the leaves of the universe with the ease with which he now cons the pages of a favorite book."

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A Woman's national medical association has been organized in Germany, with Dr. Heusler as chairman, the purposes of which are set forth under four heads: 1, an opportunity for the women physicians of Germany to form a union; 2, the study of social hygiene from the standpoint of medical women; 3, the drafting of legislation in social hygiene from the point of view of the woman physician; 4, care of superannuated women colleagues and the creation of a fund to aid young women studying medicine. The league does not endeavor to study problems of medical science nor to protect its members' economic interests.—*Medical Woman's Journal.*

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The American Association for the Advancement of Science has issued a statement calling attention to the desirability of organizing a society for those interested in the history of science. The objects of this organization would be to encourage the study of the subject and to secure adequate financial support for the magazine *Isis,* edited by Dr. George Sarton. Dr. David Eugene Smith, professor of Mathematics at Teachers College, Columbia University, is in charge of the preliminary work of correspondence and organization.

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Spinsters everywhere will welcome an expression which is quickly coming into favor. It is no longer the custom in certain quarters to refer to single ladies of from forty to fifty as being on the shady side of forty or the sunny side of fifty. The correct thing to say is: "She is about tea-time age."—*London Morning Post.*

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The introduction into the mines of wet drills and the wide extension of underground ventilation, particularly through the use of blowers and flexible tubing, have led to so great a reduction of the death rate from miners' consumption in a metal mining community in the United States that premium rates for life insurance for miners in sound health have been reduced from twenty-five to forty per cent., according to a recent report of the Department of the Interior.

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The British Ministry of Health is making a special investigation as to why monks are so long lived. Dr. S. M. Copeman is visiting the monasteries scattered about Great Britain and will publish a report on his investigations. The London *Daily News* has become interested in the problem and recently sent a reporter to the Carthusian monastery at Cowfold. Here it was found that some of the monks over seventy were considered by their elder brethren as rather young and wildish; one of the porters said he was over eighty, and some of the gardeners were of the same age. The prior explained that it was due to their abstemious and regular lives and to the absence of cause for worry.

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Books for summer evenings, light yet interesting: *Recompense,* by Robert Keable (Putnam) continues the story of Peter and Julie begun in *Simon Called Peter* and carries the lives of both to a not altogether convincing climax: *The New Candide* by John Cournos (Boni & Liveright) is an amusingly written satire on modern life, extreme in spots; *Dream* by H. G. Wells (Macmillan) is one of that versatile writer's characteristically Utopian tales; *Christopher Columbus* by Johannes V. Jensen (Knopf) is one of the Long Journey series dealing with the period of discovery of America; *The Interpreter's House* by Struthers Burt (Scribner) is a story based on an unusual theme, the psychology of the middle- and so transient-aged, with their problem of chance and adaptation at a time when these do not "come easy" to new ideals and new ways of life; *Wine of Fury* by Leigh Rogers (Knopf), a young American who was in Russia at the time of the Revolution, is a story giving a vivid and understanding picture of those months; *Dog and Duck* by Arthur Machen (Knopf) is said to be also the name given to a famous drink which Mr. Machen serves every Saturday night to a group of ardent admirers. The recipe combines sauterne and gin; other entertaining works are *Safety Pin* by J. S. Fletcher (Putnam); *Book of Blanche,* by Dorothy Richardson (Little, Brown & Co.); *White Ship* by Anno Kallas, and *Children of the Age* by Knut Hamsun (Knopf); *African Clearings* by Jean Keynon MacKenzie (Houghton Mifflin); and *Darkened Windows* by Cornelia Kate Rathbone (Appleton).

Abstracts from Current Literature

RESPIRATORY DISORDERS

New Methods for the Study of the Pathology and Treatment of Tuberculous Disease.—Almroth E. Wright (*Lancet*, February 2, 1924) shows that cavernation appears to be due to a quite special chemical action exerted upon leucocytes by the tubercle bacillus. In all probability trypsin derived from the disintegrated leucocytes comes into operation on the fibrin. In exceptional cases where the blood has been very heavily implanted with tubercle, cavitation occurs without any apparent intervention of leucocytes. Here we have cavities filled with badly staining material in which tubercle bacilli are lying loose. Such cavitation is probably produced by a caseating necrosis. In the plasma clot the tubercle bacillus probably obtains some essential nutrient element from the fibrin of the clot which is not found in the serum. While it holds true generally that leucocytes exert an inhibitory influence upon the growth of the tubercle bacillus, there are important exceptions. Where leucocytes succumb to tuberculous attack the growth of the tubercle bacillus is distinctly favored. Polynuclear phagocytosis of tubercle bacilli is generally unsuccessful, and it then furnishes new foci of infection. The essential preliminary to treatment by implanting tubercle bacilli into the blood of phthisical patients will obviously be the prosecution of research into the phenomena of emigration. We require to study the laws that govern the emigration of the leucocytes from the blood or the blood clot, how to make leucocytes invade the tubercle foci as they admigrate to the bacilli in the blood of tuberculous patients, and to study generally the chemotactic properties and the migrational movements of the different species of leucocytes. The increased leucocytic reaction and the increased tuberculobactericidal power which distinguish the blood of tuberculous patients who have reacted to autoinoculations can be obtained by the addition of bacillary emulsion to the normal blood in vitro. However, the immunizing result will depend upon two factors operating in conjunction: 1, the dose of the living microbes implanted; 2, the quantum of vaccine which is superadded. With small additions of bacillary emulsion—doses ranging above and below one in fifty million of bacillary emulsion in blood—very large reduction of the tuberculous growth is obtained. With larger doses—doses up to one in five million of bacillary emulsion in blood—increased agglomeration of leucocytes round the tubercle bacilli is obtained. But with these larger doses the tubercle bacilli dispersed in the other regions of the preparation appear to grow more plentifully.

The Scientific Treatment of Tuberculosis.—Horace Lo Grasso (*Boston Medical and Surgical Journal*, February 7, 1924) emphasizes the following points:

1. Extrapulmonary tuberculosis is only a local manifestation of a constitutional disease, being usually secondary to lung or lymph node tuberculosis, and we must, therefore, treat the disease as a whole, and not its manifestations or complications.

2. Being a disease where resistance is lowered through lack of air and sunshine, excesses, mental and physical strain, and insufficient rest, it should be treated in the country air in environments conducive to good health, cheerfulness and contentment.

3. While fresh air and sunshine are most important curative factors in the treatment of tuberculosis, rickets, and other diseases due to the same predisposing conditions, they are of still greater value in preventing these diseases.

4. The sun is an analgesic and a dispeller of gloom.

5. The sun is a great muscle developer, as seen in the perfect musculature of those cases who have been in bed for years, and hence a very important factor in maintaining good positions and in preventing the development of deformity when the patient is up and about and convalescing. The long continued use of casts for immobilization leads to the abolition of function through atrophic degeneration of specialized structures.

6. The results of operations in extrapulmonary tuberculosis have not been sufficiently encouraging to countenance the general application of surgery, whereas the results of sun treatment, both in this country and in Europe, more than justify its use.

7. Sun cure is constructive, while operative procedures are destructive in that by attempting to destroy the focus of disease, the granulation tissue, which serves as a protective wall to the surrounding normal structures, is likewise broken down, opening new areas to infection and increasing the possibility of the disease spreading and developing into acute generalized tuberculosis.

8. Surgical measures destroy and never assist in the restoration of function in a joint, while in heliotherapy our aim is to restore or maintain this function.

9. Surgical intervention is justified only in those cases where, in spite of heliotherapy, and the resulting good general physical condition, the local lesion has not shown any satisfactory improvement. It is justified, to correct deformities developed during the course of treatment in spite of all the efforts to prevent them; to provide stability by an arthrodesis in a flail and useless articulation, and to evacuate abscesses, and this only by aspiration or a small incision when the pus is very thick. It is justified in renal tuberculosis of the advanced stage, when it is better to remove the kidney.

10. Artificial light in the treatment of extrapulmonary tuberculosis at its best is only a poor substitute and of questionable value.

Complement Fixation in Tuberculosis.—A Lisle Punch and A. Hope Gosse (*British Medical Journal*, September 22, 1923) endeavored to accomplish two purposes: 1. By a study of the literature to determine what, if any, definite advance in knowledge has been made since 1906, that is to say, what points of agreement have been arrived at by the various workers, and to determine if possible the causes of their points of disagreement. 2. To determine whether the method which the authors have employed of performing the test might reasonably be expected to give the reliable results they obtained. The variety of the antigens used partially explain the variability of the results obtained. Antigens may be divided into four main groups: 1, Suspension of whole or ground up tubercle bacilli; 2, antigens that may be classed as tuberculins; 3, extracts of derivatives of tubercle bacilli; and 4, extracts of normal or tuberculous tissues.

Generally, the most reliable results were obtained with antigens of the first group. A dilute suspension of tubercle bacilli in saline is undoubtedly the best antigen for this test. In cases of both syphilitic and tuberculous infection it appears possible to demonstrate the presence in the serum of both the lipotropic substances due to spirochetal infection and the specific antibodies to the tubercle bacillus. The same remarks apply with equal force to the antigens of the third group. The varying results obtained by different workers using different antigens is no doubt due in part to the difference of the antigen. The possible contributory causes are: 1, The lack of details in the description of the methods of preparation and of constancy of preparation; 2, a lack of detailed description of the technic used; 3, incomplete clinical control of the cases and their inaccurate classification; 4, the determination of the amount of fixation of complement necessary to be regarded as positive.

Complement Fixation Tests and Tuberculosis.—Arthur Sellers (*British Medical Journal*, September 22, 1923) compared two antigens, that of Wang and that of Besredka. The author still maintains his former position, namely, that he is not satisfied that complement fixation tests afford a reliable means of clinical diagnosis in tuberculous cases. The reaction is specific in the sense that under certain conditions the mixture serum plus extract will fix more complement than either of the two alone, but it seems that the property of fixing complement in the presence of an antigen derived from tubercle bacilli is shared by serums from cases other than those of tuberculosis. A positive result does not necessarily mean a definite tuberculous infection. Probably the number of such cases is not large, but the fact that they occur must not be ignored. The results with control specimens of the cerebrospinal fluid were disappointing. Apparently a positive reaction in a case of active tuberculosis is more favorable as regards prognosis than a negative, but where there are no signs of active tuberculosis a negative result points to a healed tuberculosis. A negative reaction followed by a positive indicates that improvement is setting in.

The Present Position of the Surgical Treatment of Pulmonary Tuberculosis.—J. Gravesen (*British Medical Journal,* September 22, 1923) believes that thoracoplasty is indicated in cases that are fit for lung collapse treatment, in which careful attempts to produce an artificial pneumothorax have failed. The individualization of the operation is the chief problem in plastic operations, and concerns two questions: 1. Should the thoracoplasty be partial or complete? 2. Should the operation be performed in one or more stages? The partial thoracoplasty may be sufficient either when the affection (as a cavity) is localized to a limited area, or when a partial pneumothorax has established collapse of the upper or, more frequently, the lower part of the lung. In cases of universal involvement of the lung, partial and ineffective pneumothorax should be discontinued in favor of complete thoracoplasty. If the patient is tall with strongly adherent muscles that cause difficult and violent manipulation at operation, the thoracoplasty should be done in two stages. On the other hand, a lean person in fair general health may well be operated on in one stage. A weakened, intoxicated person with rapid pulse should always be operated on in two stages. When there is doubt as to the condition of the socalled good lung a two stage operation is indicated, as a gradual collapse of the diseased lung is likely to be tolerated better than a sudden one.

Treatment of Tuberculous Diseases.—P. W. R. Boelke (*British Medical Journal,* December 29, 1923) asserts that the most uniformly successful results are obtainable with sodium morrhuate injections as compared with the various tuberculins, Marmorek's serum, various colloidal preparations, sugar injections, etc. Sodium morrhuate is valuable even in the very advanced stages of all forms of tuberculosis. It not only gives results equal to those achieved by tuberculin treatments, but it can arrest tuberculous diseases even where previous tuberculin or sanatorium treatments have failed. When given in correct doses without reactions it neither inconveniences the patient, as is the case with Koch's treatment, nor are the injections as painful as in Beraneck's treatment. It is therefore the best treatment in ambulatory cases. It is the only reliable remedy in hemorrhagic or feverish patients. It is a safe remedy if used correctly and free from those surprises sometimes following a tuberculin injection. Patients either free from active tuberculosis or in the last stages of the disease often show no local reaction and the sodium morrhuate may be given in increasing doses up to 1 c. c. or more without local reactions. Local reactions following sodium morrhuate injections are almost specific. Unless the drug is perfect the results of this treatment are negative. Many of the failures reported heretofore have been due to the poor condition of the sodium morrhuate.

Simulation of Active Pulmonary Tuberculosis by Painless Maxillary Sinusitis.—A. Lowndes Yates (*Lancet,* November 3, 1923) states that patients may have all the symptoms of pulmonary tuberculosis and yet be suffering from sinusitis without the presence of localized symptoms. These cases are frequently mistaken for pulmonary tuberculosis. These patients present not only the symptoms of tuberculosis, namely, cough, especially at night, morning sputum, which is yellow or green in color, and often nummular, progressive emaciation, a rise of temperature in the evening and after exercise, but also certain physical signs in the chest due apparently to bronchitis, which, while not typical of tuberculosis, nevertheless render the exclusion of the diagnosis of pulmonary tuberculosis difficult. The absence of tubercle bacilli in the sputum does not exclude the presence of pulmonary tuberculosis.

The Significance of the Sedimentation Reaction of Erythrocytes in the Diagnosis of Pulmonary Tuberculosis.—K. v. Neergard (*Schweizerische medizinische Wochenschrift,* December 6, 1923) affirms that the sedimentation reaction of the leucocytes renders excellent service in the diagnosis of activity or inactivity of pulmonary tuberculosis. In a large series of cases, formerly active, but later symptomless, there was moderate agreement between the reaction and the clinical findings. The clinically cured cases showed normal values. The reaction was found particularly valuable in the differentiation between neurasthenias and the symptoms of questionable tuberculosis (nightsweats, lassitude, etc.). In pronounced cases of tuberculosis, the rapidity of the sedimentation as a rule conformed with the severity of the disease and in the final stages it became somewhat diminished. With beginning pleurisy with effusion the values were high, but after the resorption of the exudate the values diminished. On monthly repetition of the test the increase, stability, and decrease in the values agreed fairly well with the course of the disease.

Permanent Results Following Artificial Pneumothorax.—H. Maendl (*Wiener klinische Wochenschrift,* October 25, 1923) postulates the following indications and contraindications for artificial pneumothorax: Unilateral pulmonary tuberculosis is the most important indication. This procedure should be applied only when all the other therapeutic measures have failed. In initial apical processes it is particularly contraindicated. The other indications include the following conditions: bronchiectasia, pulmonary abscess, pulmonary gangrene, severe pulmonary hemorrhage, the social indications (infectiousness and pregnancy), the symptomatic indication, pleurisy with effusion with a tuberculous process on the same side. It may be used for diagnostic purposes when a pulmonary tumor is suspected. The author has also applied pneumothorax in obstinate, constantly recurring, and very painful dry pleurisy.

Symptoms of Pulmonary Tuberculosis.—Olin S. Pettengill (*Boston Medical and Surgical Journal,* February 14, 1924) says that cough is the most common symptom complained of in incipient and moderately advanced stages. Productive cough occurs in a little more than half of the early cases. Tubercle bacilli are not present in sputum until ulceration of a focus of disease occurs communicating with the air passages and continues as long as the ulceration remains open. Physical signs, x ray, or a focal tuberculin reaction must prove the presence of pulmonary tuberculosis. Constitutional symptoms show the presence of clinical tuberculosis, and their severity show the degree of toxemia. The condition of the weight under ordinary conditions of life, susceptible to fatigue or ease of tire, the presence of afternoon fever and rapid pulse, are the foundations for making a prognosis. The time has passed when it is necessary to defend rest, both local and general, in the treatment of active tuberculosis, whether the rest be a retentive apparatus for joint, pneumothorax for lung, or whispered voice for the larynx. Rest in bed lessens the liberation of toxins from foci and conserves body energy.

Bone and Joint Tuberculosis.—R. Plato Schwartz (*Journal of Bone and Joint Surgery,* January, 1924) arrives at the following conclusions from his study. Tuberculosis of bones and joints, like all other local manifestations of this disease, should be regarded as the result of a generalized infectious process. Treatment of the local manifestations becomes most effective when it mobilizes the patient's resistance against the systemic infection which preceded the local lesion. Such a therapeutic agent is available in the form of heliotherapy. Immobilization is indicated for the correction of deformity and the relief of pain and muscle spasm. Definite departure from routine immobilization methods is indicated to prevent degeneration known to result from nonuse. Surgical measures may be indicated to improve function subsequent to healing of the tuberculous lesion. The restoration of function is a more desirable end result than ankylosis.

Nature and Pathogenesis of Bronchial Asthma and Its Relationship to Hay Fever and Other Affections.—On reviewing the disease picture, the etiology, the influence of the endocrine disturbances and of metabolism, the alimentary disturbances, etc., and the methods of treatment of bronchial asthma, Leo von Gordon (*Schweizerische medizinische Wochenschrift,* December 13, 1923) remarks that he never observed continued improvement of the asthma in severe cases after the appearance of fever, as, for example, in angina. There might be a relationship between asthma and the sympathetic nervous system, an increase in the sympathicotonia, which is frequently reduced in asthma, thereby producing an attack, as in that following adrenalin treatment.

Some Points in the Early Diagnosis of Pneumonia.—Tasker Howard (*New York State Journal of Medicine,* April 18, 1924) points out certain pitfalls in the early diagnosis of pneumonia. A patient lying on his side may present relative hyperresonance over the lung base on the lower side and he will tend to exhibit more intense breath sounds on this side. Râles over an affected lower lobe may appear when the patient lies on the affected side and disappear when he lies on the unaffected side. Bearing these points in mind one gains greatly in precision by examining the back of

every suspected pneumonia patient while he is lying first on one side and then on the other. Several positive findings in the early stage of pneumonia are to be emphasized: 1, the early increased respiratory rate; 2, the early leucocytosis; 3, that with or without consistent areas of hyperresonance, with diminished or roughened breathing, the presence of localized râles is most significant, and that these râles can best be brought out by having the patient cough.

SURGERY

Compression Leverage Fractures of the Ankle Joint.—J. H. Stevens (*Surgery, Gynecology and Obstetrics,* February, 1924), sums up his findings as follows:

Leverage fractures of the ankle under compression are, in reality, all of the same etiology, and vary simply from distribution of force and intensity of stress. This applies to most of the socalled simple fractures of the lower end of the fibula since the salient features of this fracture are present: i. e., ligamentous and tendon injury and a destroyed mortise permitting dislocation. Simple fractures of the fibula at any level, the result of direct violence without ligamentous rupture, do not belong to this type, but there are no compression leverage fractures of this kind involving the ankle joint. The inversion types are not usually attended with so great a destruction of ligaments, but there is an equal or more serious involvement of tendon sheaths, and a greater posterior dislocation is common in our experience.

The majority of these fractured ankles are not tremendously serious injuries and do not deserve the bad repute which is theirs at present. The bad results have been the result of immobilization and misdirection of effort on the part of the surgeon. Motion, active and passive, from the very beginning is the solution of the problem. Do not permit the ankle joint to stiffen in the first place. This is easy to prevent. It is only overcome, once it has occurred, at the expense of tremendous effort and months of time.

It is easy to reduce an ankle fracture, put it in a cast and look at it once a week, but it is fatal to the patient. If time is too important for one to devote twenty minutes a day to his ankle fracture, he had better turn them over to some other surgeon. No masseur is competent to do this work unless he is a surgeon and also competent to remedy any bad result. In the hands of a man who understands the pathology of the lesion, there is no danger.

From both the standpoint of economics and compensation insurance, this is a tremendously important subject. The time lost now, as a result of this injury, is enormous. It often extends over periods of months, or even a year or more, in individual cases, and this applies unfortunately to the mild type as well as the severe. Multiply this by the number of ankle fractures in a single year, and the time lost will be found to be enormous. A fracture of this type, without complications, should be returned to light employment in from four to seven weeks, with a practically normal foot, except for some swelling which in certain cases will persist for a long time.

Treatment of Fractures.—R. J. Cook (*Journal of Bone and Joint Surgery,* January, 1924) makes a comparative study of the various methods of treatment with the following results. When wounds are found to be infected by the streptococcus it is necessary to open the wound widely and desirable to treat the wound by the Carrel-Dakin method. When a gas bacillus infection is present, amputation above the level of the infection should be done. The failure to debride or the incomplete débridement of a wound has given opportunity in several cases for the development of gas bacillus infection. When débridement is well done such infection should not occur.

When it is possible to reduce the fracture at the time of the primary treatment it is found that the wound heals much more quickly. Contraindications were found in cases where the circulation was endangered, where there was danger of increasing the infection from the handling which such a procedure at times entails, or where it was difficult to keep the fracture reduced. When the fracture cannot be maintained in reduction by the replacement of the fractured ends in apposition it is better to wait and to do an open reduction after the primary wound has healed. The introduction of foreign material, such as tendon, wire, or plates, into the wound has led to difficulty and the development of a gas bacillus infection because of which amputation was subsequently necessary.

Osteomyelitis is more common in those cases treated by aseptic occlusion, drainage, and incomplete débridement. Bony deformity, as shortening of the limb, may occur in any type of treatment where it is not possible to maintain proper traction or to suture, wire plate or graft the fracture when indicated. Nonunion occurs most commonly because of infection, as does also delayed union. Nonunion and delayed union are also affected by lues.

The causes of the failure of treatment in cases treated by aseptic occlusion were incomplete drainage, infection, osteomyelitis, and sequestra. In simple drainage we find, likewise, the same causes of failure, with the additional one of the introduction of plates and wire. The main difficulty of cause of failure when the Carrel-Dakin treatment was used was the presence of sequestra or osteomyelitis. In the cases treated by débridement and suture the failures were due to incomplete débridement, as evidenced by the subsequent infection. When any form of treatment has failed it has been necessary to redrain the wound, to remove sequestra or osteomyelitic bone, and in the more serious cases of gas bacillus infection to amputate. The Carrel-Dakin treatment has been of much value in keeping the infection of wounds under control when the focus of infection has first been removed.

Wounds of compound fractures caused by direct violence heal, in general, more slowly than do those caused by indirect violence, because the traumatization of soft parts in the latter case is not as severe. However, this distinction is complicated by the fact that the extent of trauma and laceration of the wound has a marked relation to the time of healing required. It is possible, moreover, to require the necessary time of healing by débridement of the wound. In this series of cases we find that débridement reduces, by one half, the time required for the healing of lacerated wounds if we compare the lacerated wound treatment by aseptic occlusion and débridement. Puncture wounds treated by aseptic occlusion healed in about the same time as wounds treated by débridement.

The time which the patient must spend in the hospital is shortest under the method of débridement and suture, when successfully done. Next in order, in respect to time, is the method of primary occlusion, and next, the Carrel-Dakin technic.

Remote Results of Nerve Operations.—H. Platt and W. R. Bristow (*British Journal of Surgery,* January, 1924) present a thorough and detailed study with the following summary and conclusions.

1. The results of end to end suture in the case of gunshot lesions are for the most part imperfect both from a neurological and an economic viewpoint. In an average series of consecutive operations, complete failures will be found in about twenty per cent. The musculospiral nerve heads the list of recoveries, and may be expected to show practically complete restoration of function in at least fifty per cent. of the successful cases. The ulna and median nerves give disappointing results on the whole. In the former complete recovery in the intrinsic muscles of the hand is so rare as to be almost unknown; in the cases showing recovery neurotization of the hypothenar muscles alone is fairly constant. The economic results, however, in this nerve are often good, except in individuals whose occupation demands the finer coordinated movements of the fingers. In the median the sensory recovery is always inadequate, and this factor is the cause of the great depreciation in the function of the hand. In sutures of the median in the forearm, complete failure of recovery in the thenar muscles is frequently seen. The results of sciatic nerve sutures are poor, and a considerable number of such limbs come ultimately to amputation.

2. The outstanding causes of failure or imperfections—apart from delay, or gross errors in operative technic—are changes in the nerve above the line of suture—either interstitial fibrosis or an ascending neuritis—due in either case to wound infection, and topographical confusion in regeneration.

3. The operations of indirect nerve repair (with the possible exception of nervegrafting) have proved ineffective, and should be eliminated from the repertoire of peripheral nerve surgery. Investigations of the results of a small number of nervegrafting operations in this country suggest that these procedures are of limited value.

4. In the nerve lesions associated with profound irritation (causalgia), resection and suture, or the intraneural injection of seventy per cent. alcohol, will rarely fail to bring about immediate and complete relief of the pain, but at the cost of the signs and symptoms associated with complete division of that nerve.

In conclusion, the author wishes to make it clear that although a fair and critical survey of the nerve injuries of the war must leave one pessimistically inclined, yet there is a brighter side to the picture. War injuries are complicated by sepsis; but the prognosis for the nerve injuries of civil life must be vastly better, and the experience gained in nerve surgery on the scale which has been possible will help to crystallize our ideas for the benefit of the patient, and for an improvement in surgical teaching.

Prognosis in Epiphyseal Line Fractures.—M. K. Smith (*Annals of Surgery,* February, 1924) reports on thirty-three cases as follows: Thirty-three cases of epiphyseal line injuries have been followed up. Of these there were twenty-eight boys and five girls. The average age was twelve years plus. Only eight were ten years or less, the majority of these being in the lower humeral group. Fifteen per cent. showed premature or earlier ossification. This was found as promptly as six months after injury in one case and as late as two and one quarter years in another. Retardation of growth to a slight degree is common. It was present in thirty-three per cent. of twenty-one injuries to actively growing epiphyses of long bones. There was decided deformity from shortening in two cases of the twenty-one, or about ten per cent. Retardation of growth may persist without premature ossification. From a study of this series it appears that a retardation of growth is seldom compensated later. In lower radial injury with retardation a lesser ulna retardation is often associated, with or without ulna fracture. There seems to be a marked tendency for natural correction or compensation of epiphyseal separations to take place in such as have not been reduced.

INFECTIOUS DISEASES

Serum Prophylaxis of Measles.—S. E. Pesetke (*Journal of the Missouri State Medical Association,* March, 1924), believes that intramuscular injections of blood serum obtained during the second week of measles convalescence is highly effective in the prevention of measles. Immunity is temporary and of relatively short duration; perhaps fourteen months as a maximum. Late administration, that is from the fifth to sixth day of incubation, greatly modifies the clinical picture, producing a very mild course with establishment of complete immunity. This method is particularly adapted to the protection of large groups of children in institutions, especially those groups that are undernourished, rachitic or tuberculous.

Differential Diagnosis of the Exanthemata.—William L. Somerset (*New York State Journal of Medicine,* April 19, 1924), first considers scarlet fever which presents cardinal symptoms, namely, fever, sore throat or enanthem, skin eruption or exanthem. The fever and sore throat invariably appear at least twenty-four hours before the rash. The absence of any one of these three cardinal symptoms precludes the possibility of scarlet fever. Any throat or skin affection due to scarlet fever will invariably persist to the second or even third day after date of appearance. Smallpox is confused with syphilis and chickenpox. Syphilis works more slowly and chickenpox more quickly than smallpox. The umbilication of smallpox lesions is pathognomonic, again the four day prodromal period of small pox with remission of symptoms on appearance of the rash is characteristic.

An Immunity Reaction in Scarlet Fever.—W. Mair (*Lancet,* December 29, 1923), maintains that the Schultz-Charlton reaction is a toxin-antitoxin phenomenon. The rash and other changes in the skin are due to a scarlatinal toxin which has entered into combination with the tissue cells. Among the affected cells are those contractile elements which have been shown to exist even in capillary blood-vessels and to the function of which the normal tone of the capillaries is due. The toxin interferes with the function of these cells and a loss of tone of the capillaries results in erythema and the exudative phenomena as seen in the scarlet fever exanthem. The serum injected, when it gives a positive reaction, is supposed to contain an antitoxin which is able to dislodge and neutralize the toxin fixed in the cells, and so to restore their normal function in the area affected. The period of delay, twelve to twenty-four hours, in the appearance of the reaction, is no doubt due to the fact that the toxin is attached to the cells, and some time is thus required for its neutralization. When the rash fades in a normal manner the mechanism is probably different as this occurs long before any antitoxin can be demonstrated in the patient's blood.

Active Immunization of Adults Against Diphtheria.—Sanford B. Hooker (*Boston Medical and Surgical Journal,* February 21, 1924), says that systematic application of the Schick test and toxin-antitoxin immunization of susceptibles are procedures highly effective in the control of diphtheria among young adults who are later brought into close and prolonged contact with the disease. The results obtained in five hundred medical students and nurses are tabulated. About sixty per cent. of this class of individuals are susceptible to diphtheria. One series of toxin-antitoxin injections immunizes three fourths of them. A second series to those who remain Schick positive is at least equally effective. The systemic reactions which adults are prone to experience under the usual toxin-antitoxin dose schedule can be greatly reduced by using the local reaction as a guide to dosage increase. A considerable number of the subjects become hypersensitive to horse serum as a result of these injections and endermal serum tests; this is deemed undesirable and can be avoided by substituting goat antitoxin for the horse antitoxin now used in the mixtures. Clinical diphtheria among members of the tested group has been reduced over ninety-five per cent.

Studies on Varicella.—In a study of the Susceptibility of Rabbits to the Virus of Varicella, Thomas M. Rivers and William S. Tillett (*Journal of Experimental Medicine,* December, 1923), noted that irritation seemed to have a direct influence on the localization of the virus of varicella in the skin, which is indirect evidence that the virus is probably in the blood. A virus was recovered from the blood of varicella patients drawn during the first twenty-four hours after the appearance of the eruption. The blood in two c.c. amounts before clotting was injected into each testicle of normal rabbits. Four days later testicular emulsions were prepared. These were free from ordinary aerobic and anaerobic bacteria, but contained the virus and produced lesions in the cornea, skin and testicles of rabbits. It was possible to transmit the virus indefinitely from rabbit to rabbit by testicular inoculation.

Experimental Studies on the Etiology of Typhus Fever. In a study of the survival of the virus in collodion sacs implanted intraabdominally in guineapigs, Peter K. Olitsky and James E. McCartney (*Journal of Experimental Medicine,* December, 1923), employed collodion sacs described by Gates, and implanted them intraperitoneally in guineapigs after inoculation with the typhus virus. Animals so treated inoculated with blood containing typhus virus, showed no febrile or other reactions. When, on the other hand, the contents of the sacs removed after twenty-eight to thirty-one days were injected into normal guineapigs, these developed typical experimental typhus fever, showing that the virus was still active.

Hemolytic and Agglutinative Properties of Diphtheria Antitoxin.—Howard Osgood (*Buffalo General Hospital Bulletin,* January, 1924), states that the samples of diphtheria antitoxin examined had the power of lacking human erythrocytes when these were added to the undiluted antitoxin and to low dilutions of it in physiological salt solution. This laking was due, at least in the main part, to the tricresol present as a preservative. This tricresol laking is inhibited by the presence of human blood serum in the proportion of one part of serum to six or seven parts of antitoxin or dilution of the same. A larger proportion of blood serum would probably completely inhibit the tricresol laking in every lot. The great excess of blood serum present when antitoxin is injected intravenously would prevent any such laking in the patient, both by dilution and by its specific inhibiting power. All lots of antitoxin showed strong, though somewhat atypical, agglutination of human erythrocytes, when tested undiluted and in 1.2 dilution. It seems possible that this weak agglutinative activity would have no effect on the patient's erythrocytes, when the antitoxin is injected intravenously.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, JULY 2, 1924

Medicolegal Notes.

SYSTOLIC BLOOD PRESSURE DECEPTION TEST RESULT NOT ADMISSIBLE IN EVIDENCE

In a murder case, counsel for the defendant in the course of the trial offered an expert witness to testify to the result of a systolic blood pressure deception test which had been made upon the defendant prior to the trial, but objection to the offer was sustained. The court also denied an offer to have the proffered witness conduct a test in the presence of the jury. On appeal, counsel based their case, which presents a novel question on which no precedents directly in point had been found, on the rule which admits in evidence the opinions of witnesses skilled in a particular science, art, or trade to which the question involved relates, when such question does not lie within the range of common experience or common knowledge.

The Court of Appeals of the District of Columbia, Frye v. United States, 293 Fed. 1013, affirming the judgment of conviction, says: "Just when a scientific principle or discovery crosses the line between the experimental and demonstrable stages is difficult to define. Somewhere in this twilight zone the evidential force of the principle must be recognized, and while courts will go a long way in admitting expert testimony deduced from a well recognized scientific principle or discovery, the thing from which the deduction is made must be sufficiently established to have gained general acceptance in the particular field in which it belongs.

"We think the systolic blood pressure deception test has not yet gained such standing and scientific recognition among physiological and psychological authorities as would justify the courts in admitting expert testimony deduced from the discovery, development, and experiments thus far made."

MALPRACTICE IN USING ELECTRICAL TREATMENT NOT SHOWN BY THE EVIDENCE

In an action for malpractice the question was whether the defendant physician by unskilful electrical treatment of a lump between the plaintiff's breasts burned her on the chest about midway between the breasts and, as a consequence, injured her. The plaintiff testified that a condition for which the defendant had treated her about four years before, the nature and cause of which were not shown by the evidence, had continued and resulted in the swelling, that the defendant had advised an operation and, on her refusal to undergo it, had treated her with blue ray electricity and later with a different appliance which had burned her; that he had then advised her to see a certain expert, whom she saw but from whom she received no treatment; and that she then went to another physician for treatment for a condition claimed to be a result of the burns. The defendant testified that when the plaintiff consulted him about the swelling, which was probably traumatic, due to a fall, he advised a surgical operation, but she said she was afraid of an operation; that he then told her the only treatment he could advise was a high frequency treatment, which is the same as the blue flame; that he gave her twelve such treatments, each lasting five or six minutes, at intervals of about twice a week. He said he never had a therapeutic or heat producing lamp; that he ultimately told the plaintiff the treatments were doing her no good, and gave her a letter to an expert, telling her to come back and let him know what the expert thought of it, and that he did not see her again; and that the swelling remained practically the same as when he first saw her. Medical experts testified that a therapeutic lamp such as the plaintiff said the defendant had used would not have caused burns of the nature complained of, and that the defendant's treatment was proper under the circumstances shown. It was not shown that the burns resulted from the treatment.

The Illinois Appellate Court, Graiziger v. Heussler, 229 Ill. App. 365, held that a judgment against the defendant was against the evidence, and it was reversed, with a finding of fact that the evidence did not show a lack of ordinary care on the part of the defendant.

The court said, in part: "As to the element of injury, arising as a result of the alleged unskilfulness, it is the obligation of the plaintiff to prove not only a lack of ordinary care on the part of the defendant, but in addition thereto, that some injury occurred as a consequence. In other words, the defendant is not liable merely because he failed to exercise ordinary care, but is only liable when it is also proven that some injury has resulted therefrom. Further, the principle of *res ipsa loquitur* does not apply. The mere fact that the abnormal condition, which existed at the time of the treatment complained of, for a time grew worse, is not of itself any evidence that the treatment was unskilful. A medical practitioner is not an insurer."

INSUFFICIENT EVIDENCE OF CORPUS DELICTI

In a murder case, the evidence disclosed that a young man, 21 years old, of slight stature, weighing 135 pounds, whose arms had been injured and incapacitated by a previous railway accident, struck deceased two blows with his bare fist in the face, leaving slight discoloration of the skin; that deceased was a large man weighing 247 pounds and 5 feet 9 inches in height and of robust physical prowess; that the deceased had been within a few hours previous drinking moonshine and other liquors to intoxication, and upon being struck sank down on the street slowly as if lying down, and in a few minutes afterwards expired, the autopsy disclosing a blood clot at the base of the brain as the cause of death, but no congestion of the brain, nor any internal evidences of injury to the brain other than the blood clot; that there was a slight discoloration on the inside of the skin on the back of the head, discernible only after the scalp had been removed, and no injury to the skull, and the medical expert, not experienced in brain surgery, said death might possibly have resulted from the blows; and it appeared that there was no ill feeling between the parties, and no motive for the act, the Supreme Court of Appeals of West Virginia holds, State v. Roush, 120 S. E. 304, that the corpus delicti had not been proved to the full measure of the law, and a verdict of murder was set aside and a new trial awarded.

PROXIMATE CAUSE OF SPREAD OF DISEASE

The Oklahoma Supreme Court, City of Shawnee v. Jeter, 221 Pac. 758, states as an almost universal holding of the courts, that the care of persons afflicted with contagious diseases is a governmental function, and consequently a municipal corporation is not liable in damages for the neglect of its officers in performing services in aid of that function. The health officer of a city, in placing a stranger afflicted with smallpox in the isolation ward of the city hospital, is carrying out one of its governmental duties.

In an action against a city for the death of a patient in the city hospital, alleged to have been caused by the negligent acts of the matron or her assistants in permitting nurses to go in and out of the isolation ward and through the hospital, resulting in the patient contracting smallpox, it was held that there was no evidence to show that this had been done except at a time when the patient had already contracted smallpox, so that this, if negligence, could not have been the proximate cause of the injury.

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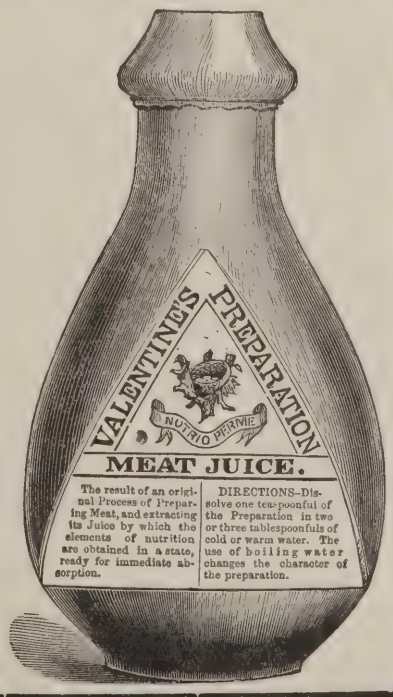
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Miscellany.

The Earlier Methods Employed in the Treatment of Syphilis.—Dr. Francis R. Packard (*Annals of Medical History*, September, 1923) writes that it is now generally believed that syphilis existed in Europe long before 1495, the year in which it sprang suddenly into such terrible prominence. It was called by many different names, especially leprosy. Before 1500, there were some 19,000 socalled leper hospitals scattered over Europe, which completely vanished as syphilis became better understood. The name syphilis was first used in connection with the disease by Fracastorius (1530) in a poem called *Syphilis sive morbus*, in which the word is used as the name of a shepherd who is stricken because of a sacrilegious act. Before that time, the disease was called *morbus venereus*, or more popularly, the French disease, the Spanish disease, or the Neapolitan disease. "Europeans, tired of attributing it to one another, called it the new disease and blamed its introduction on the sailors of Columbus." Until the latter part of the eighteenth century, all venereal sores or manifestations, including gonorrhea, were called syphilitic.

Quackery has predominated in the treatment of venereal diseases, unfortunately, from the earliest times to the present. A curious fact is that the most successful quack remedies of the sixteenth century contained mercury, a favorite medicine for leprosy, administered either by fumigation or inunction.

A poem on syphilis more than thirty years earlier than that of Fracastorius, though less widely known, was one by Francisco Lopez de Villabos, physician to King Ferdinand of Spain, entitled On the Contagious and Accursed Buboes. In this the treatment of salivation with mercury administered by fumigations or inunctions is vigorously condemned, and its use as an ointment only advocated. Fracastorius, who ascribed the disease to astrological agencies, prescribed a treatment through salivation the principles of which were the chief mainstays of the therapeutics of syphilis for hundreds of years. He advocates at first trial of a series of simpler remedies having to do with climate, exercise, diet, bleeding, and the drinking of certain decoctions and application of topical remedies. If these fail, fumigations composed of styrax, cinnabar, antimony and incense should be resorted to. These fumigations should be confined to those parts of the body which are the seats of eruptions or ulcers. Mercury is preferred as a basis for these fumigations, and was administered in an ointment mixed with black hellebore, orris root, galbanum, asafetida, oil of mastic and oil of native sulphur.

Benvenuto Cellini in his writings lauds Berengarius of Capri for his successful treatment of syphilis with mercurial inunctions. He adds, however, that Berengarius departed from Rome very hastily and wisely because all his patients relapsed, and he would have been murdered, had he stayed. This fifteenth century treatment by mercurial inunctions was carried out so as to ensure salivation. The patient was smeared from head to foot with the mixture containing the mercury applied with a brush, usually by a barber, surgeon or apothecary. Then he was put into a great tub or cask and sweated. Of course many died from mercurial poisoning or exhaustion. Paré's treatment, based on de Héry's, recommends four methods of cure: guaiac decoctions, rubbing with ointments containing mercury or sulphur, mercury plasters, and fumigation with cinnabar; all these are based on sweating. Paracelsus (1493) is usually given the credit for popularizing the internal use of mercury in syphilis. Mattioli (1501) is also credited for giving mercury internally. The first known formula for mercury in pill form was one which Barbarossa, pirate king of Algiers, sent to Francis I. This formula, slightly modified, was that of the famous Belloste pills, still retained in the French codex.

Next as a remedy came the "sacred wood," guaiac, of which Fracastorius also speaks; then, Chinese smilax, extolled by Vesalius, later supplanted by sarsaparilla, followed by the gold treatment, and finally potassium iodide, ascribed to William Wallace of Dublin (1833).

The Seasonal Factor in Mortality.—Interest is being centred more and more upon the seasonal fluctuation of sickness and death and upon the possible influence of weather factors on health conditions. The first quarter of the year in the north temperate zone carries with it the heaviest deathrate. From that point onward, the rates of sickness and of death decline to a minimum in the fall months. The figures then gradually rise with the close of the year.

These facts of seasonal variation have been generally appreciated. But, there are many implications which are worthy of detailed treatment. In a recent issue of the *Statistical Bulletin* of the Metropolitan Life Insurance Company, it was shown that the deathrate varied inversely with the temperature. It was calculated that if the deathrate were always as low as when the temperature averaged 65° F., ten per cent. of the deaths in the city might have been avoided. Conclusions of this kind are very important. They show the extent to which departures in temperature and other weather elements affect the deathrate and at what times in the year conscious, deliberate attempts should be made by the individual to safeguard himself and the members of his family. Advances in ventilation engineering and in building construction have made it possible to safeguard mankind from the vagaries of weather and from unwholesome indoor conditions.

Investigations into the effect of weather upon mortality in various seasons of the year make necessary that the element of normal seasonal variation be understood and properly provided for in the calculation. Thus, if a January rate of 10.1 is followed by a February rate of 12.3 per 1,000, the question is how much of this increase is due to normal seasonal variation and how much to some other but unusual mortality factor. It is possible that there may have been an exceptional increase in the February death rate due to an outbreak of an epidemic disease or to unusually severe weather conditions. The influence of any such exceptional factors can be measured approximately by determining the extent to which the increase in February over January exceeds the expected month to month rise usual in these two months.

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The Doctor and Public Health.—There are certain small nations which have low death rates, although there seems to be little done in the way of public health work as such. The low mortality is credited in part to favorable conditions of climate, food, and outdoor life, but it is said to be largely due to the influence of a well trained and efficient medical profession which has the confidence of a public intelligent enough to choose and trust expert guidance. Hence sanitation, quarantine, inoculation, and hygienic living become a part of daily routine and are fixed in the official machinery, social customs, and personal habits of the people.

In all lands doctors are an essential part of the public health movement. They report births, causes of death, and cases of communicable disease. Upon them depends the introduction of new resources of diagnosis and treatment; for good or ill they educate their patients; they influence public opinion for or against preventive policies. No health service can prosper permanently unless it can command the loyal support of competent local practising physicians. The presence of physicians, poorly trained or with no interest in preventive medicine, or of representatives of various occult, empirical, or fraudulent cults is a serious handicap to effective sanitation and hygiene.

It follows that medical education plays an essential part in the leadership and success of public health work. The Rockefeller Foundation is concerned, therefore, in aiding influential medical schools in many parts of the world to improve their facilities, to strengthen their teaching staffs, to perfect their methods, to maintain high standards, and gradually, in the words of a distinguished British medical authority, to "permeate the curriculum with the preventive idea." With respect to the last suggestion the International Health Board is supporting in a leading American medical school a plan which aims at getting every teacher to emphasize the preventive and community aspects of every topic with which he deals in his regular courses.

Goitre Abundant Where Iodine Is Scarce.—Further confirmation of the relation between a lack of iodine and the presence of goitre is presented in a report to the American Medical Association by Dr. J. F. McClendon and J. C. Hathaway of the University of Minnesota. They analyzed samples of drinking water and of food from all parts of the country, and found that where iodine was rare, goitre was abundant.

Water from Lake Superior near Duluth, Minn., and drinking water from Spokane, Wash., and from Rockford, Ill., contain only about one part of iodine to one million parts of water. All these places are in regions where goitre is relatively common. On the other hand, water from Mexia, Texas, and from Stanford, Cal., where goitre is rare, was found to contain respectively 18,000 and 10,000 parts of iodine to the million parts of water. If regions in which the proportion of iodine in the water is less than twenty-two parts to the million be charted, the map closely coincides with one in which high percentages of goitre in human beings is found. Sault Ste. Marie, Mich., and Rochester, N. Y., are adding small amounts of iodine to water in the city reservoirs as a preventive of goitre.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE WINE OF FURY. By Leigh Rogers. New York: Alfred A. Knopf, 1924. Pp. 340.

DOG AND DUCK. By Arthur Machen. New York: Alfred A. Knopf, 1924. Pp. 225.

QUESTIONS ACTUELLES DE BIOLOGIE MÉDICALE. Par G.-H. Roger. Paris: Masson et Cie, 1924. Pp. 194.

THE HEALTH BOOK. By Royal S. Copeland, M.D. New York: Harcourt, Brace and Company, 1924.

APERÇU DE LA PHYSIOLOGIE ET DE LA PATHOLOGIE GÉNÉRALES DU SYSTÈME LACUNAIRE. Par Ch. Achard. Paris: Masson et Cie., 1924. Pp. 124.

HISTOIRE DE LA MÉDECINE. Depuis ses Origines Jusqu'a nos Jours. Par Dr. L. Meunier. Préface par le professeur Gilbert Ballet. Paris: E. le François, 1924. Pp. 637.

COSMETIC SURGERY. The Correction of Featural Imperfections. By Charles Conrad Miller, M.D. With 140 Illustrations. Philadelphia: F. A. Davis Company, 1924. Pp. 263.

GUIDE PRATIQUE D'ANALYSES DE CHIMIE BIOLOGIQUE. Pour L'Urine, Le Sang, Le Suc Gastrique, Les Matières Fécales, etc. Par René Clogne. Préface de M. le Professeur agrégé J. Castaigne. Paris: Le François, 1924. Pp. 282.

FIRST STEPS IN ORGANIZING A HOSPITAL. An Exposition of Ideals and Principles Incident to the Inception and Organization of a Hospital. By Joseph J. Weber, M. A. New York: The MacMillan Company, 1924. Pp. 199.

MANAGEMENT OF DIABETES. Treatment by Dietary Regulation and the Use of Insulin. Manual for Physicians and Nurses Based on the Course of Instruction Given at the Presbyterian Hospital, New York. By George A. Harrop, Jr., M.D., with Introduction by Walter W. Palmer, M.D. New York: Paul B. Hoeber, Inc., 1924. Pp. 190.

TEXT BOOK OF PHARMACOLOGY AND THERAPEUTICS, Or The Action of Drugs in Health and Disease. By Arthur R. Cushny, M.A., M.D., LLD., F.R.S. Eighth Edition, Thoroughly Revised. Illustrated with 73 Engravings. Philadelphia and New York: Lea and Febiger, 1924. Pp. 707.

HANDBUCH DER BIOCHEMIE DES MENSCHEN UND DER TIERE. Unter Mitwirkung von Geh. Rat E. Abderhalden, Halle A. S.; Prof. Hans Aron, Breslau, et. al. Herausgegeben von Prof. Dr. Phil. et Med. Carl Oppenheimer. Zweite Auflage. Lieferung 14 und 15. Band I. Jena: Gustav Fischer, 1924. Pp. 373.

DISEASES OF MIDDLE LIFE. The Prevention, Recognition and Treatment of the Morbid Processes of Special Significance in this Critical Life Period. Comprising Twenty-two Original Articles by Various Eminent Authorities. Edited by Frank A. Craig, M.D. In Two Volumes. Illustrated. Philadelphia: F. A. Davis Company, 1924. Pp. 920.

HANDBOOK OF MODERN TREATMENT AND MEDICAL FORMULARY. Condensed and Comprehensive Manual of Practical Formulas and General Remedial Measures. Compiled by W. B. Campbell, M.D. Seventh Revised and Enlarged Edition. By John C. Rommel, M.D., and C. E. Hoffman, Ph.M. Philadelphia: F. A. Davis Company, 1924. Pp. 693.

HANDBUCH DER BIOLOGISCHEN ARBEITSMETHODEN. Abt. IV. Angewandte chemische und physikalische Methoden, Teil 8, Heft 5. Undersuchung der Nanrungs- und Genussmittel. Nahrungs- u. Genussmittel-untersuchungen.; Abt. V. Methoden zum Studium der Funktionen der einzelnen Organe des tierischen Organismus, Teil 2, Heft 6. Allgemeine und vergleichende Physiologie. Die Methoden der Medizinischen Statistik; Teil 3 B, Heft 2. Funktionen bestimmter Organe; Abt. XIII, Methoden der Immunitätsforschung und der experimentellen Therapie, Teil 2, Heft 2. Immünitats forschung. Berlin und Wien: Urban und Schwarzenberg, 1924.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 2 NEW YORK, WEDNESDAY, JULY 16, 1924 WHOLE No. 2285

The Social Significance of Medicine*

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In times of peace the individual is prone to an exaggerated assertion of self at the expense of society; in times of war, or when war is threatened, bonds that hold individuals together in a nation become firmer and collective interests temporarily become paramount. At all times it is desirable that a proper balance be maintained between the activities that favor individual or group welfare and those that favor the welfare of society as a whole; for, on the one hand, the individual must do well if society is to prosper, and, on the other hand, society must be preserved and strengthened through the loyalty, devotion and obedience of its units, even at the sacrifice of some of their individual interests, if the individual is to have freedom of opportunity for the exercise of his faculties. It would seem desirable, therefore, that each person, and each occupational or professional group, should, occasionally, give some special thought to the matter of his and its social meaning and value. This is my excuse for asking your attention to a brief consideration of the social significance of medicine.

In estimating the value of a person or of a professional group to society, one must try to determine the relation of the activities of that person, or of that group, to the attainment of the aims of society as a whole. In our modern civilization the aim of society would seem to be the attainment and maintenance of those conditions in its members and in their environment that will, to the greatest number of units, permit of the greatest freedom in exercising harmoniously their various faculties, each for his own and at the same time for the collective welfare. Theoretically, in a perfect state, the men and women who constitute it could and would lead lives through which the highest individual good and the highest collective good would simultaneously be realized. But the perfect state never has existed, and never will exist, except as a fiction, an ideal toward which we may work, a standard by which our imperfect collective achievements may be measured and valued.

If these preliminary assumptions be agreed to, my task resolves itself into a consideration of the importance of the functions of the members of the medical profession for promoting the freedom of social units to live full and well proportioned lives, lives that are individually good because of the proper exercise of all the liver's faculties and that promote the collective good because in them the social virtues are practised. And since the kind of life a person lives depends upon his inborn capacities and upon the surroundings they are immersed in after birth, the business before us is to inquire in how far medicine does and can influence the constitutional and environmental conditions of man, which determine his functions and the modes of their exercise. In undertaking as its province the maintenance of health and the prevention and cure of disease in human beings, the medical profession has entered upon a gigantic enterprise, one that makes great demands upon the heads and hearts of those who engage in it, one that is full of promise for the welfare of individual persons, and one that when comprehensively viewed will be seen, I must believe, to be so significant for the whole of society as to demand, indeed to guarantee, society's warm support and high esteem.

If the view of the functions of medicine that I shall try to outline be well founded, then our profession can lay claim to at least equal rank with her sister profession of the law in importance for the promotion of collective welfare. The great philosopher David Hume, speaking of the law, said: "Man born in a family is compelled to maintain society from necessity, from natural inclination and from habit. The same creature, in his further progress, is engaged to establish political society in order to administer justice, without which there can be no peace among them, nor safety, nor mutual intercourse. We are therefore to look upon all the vast apparatus of our government as having ultimately no other object or purpose but the distribution of justice, or, in other words, the support of the judges. Kings and parliaments, fleets and armies, officers of the court and revenue, ambassadors, ministers and privy councillors are all subordinate in the end to this part of administration." Truly a noble view of the law! My aim is to show that medicine, which has as its object the healthy mind in the healthy body, and which devises and executes eugenic and euthenic programs directed toward this end, performs a service to society that is equally indispensable, a service, indeed, upon which, on due consideration, the very practice of justice itself will be seen to depend.

*An address to the Fellows of the College of Physicians, Philadelphia, October 3, 1923.

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Medical men in ancient times doubtless began their activities by striving to be of help to those who were sick, injured or otherwise in distress, applying all the simple remedies that the method of trial and error taught them to be of value for their care or alleviation. From these primitive beginnings the great work of the medical profession has gradually evolved. The curiosity excited by deformity and disease stimulated the simpler observational investigations that were the forerunners of the abstruse researches of the modern medical experimenter and discoverer; the primitive remedial activities became gradually extended to culminate in the rich therapeutical armamentarium and the elaborate practical technical methods of the presentday medical and surgical practitioner. The recognition of the disastrous consequences of disease, stimulating observation and inquiry into conditions of health, gave rise to the earlier rules for the preservation of health and the prevention of disease that have been transformed during centuries of change into the more precise and further reaching regulations of contemporary personal, communal and racial hygiene. And the methods of passing on medical lore from person to person, from experienced master to apprenticed pupil, gradually underwent development and differentiation into our modern agencies and institutions for the diffusion of knowledge of medical science and for training in the art of applying it—our great schools of medicine and of hygiene with their specialized faculty members, our libraries with their rich stores in medical textbooks, monographs and journals, and our local, regional, national and international medical associations for the quick transmission and wholesome, penetrative criticism of new medical facts and impulses. Out of the chaos of ancient medical myths the whimsical and extravagant notions of antique therapy, the hygienic traditions of primitive peoples and the defective early methods of transmitting medical knowledge have emerged the medical research, the medical practice, the preventive medicine, the public health measures and the scientific medical education that are characteristic of the civilization of the twentieth century. Those members of society to whom have been entrusted the special function of preserving health and of curing and preventing disease have undoubtedly through the ages felt in ever increasing measure the magnitude and the seriousness of their responsibilities. They have achieved results and left records that give abundant reason for professional pride; they have opened paths for work that are full of promise to those who will further walk in them, and they have by their intellects and imaginations conceived of worthy ideals that spur us, their successors, to devote our best efforts to the attempt to realize them.

Since society achieves its own welfare through the life activities of its constituent units, let us examine the ways in which the medical profession of today becomes socially significant through promotion of the selfrealization of individuals in social service. What does the medical profession do, on the one hand, to help equalize individuals in their freedom to exercise all their functions, to find adequate expression for the whole of their personality, and, on the other hand, to aid social justice by favoring a balanced proportion among the interests of those who have equal rights to the possession of interests. In other words, in how far are physicians of use in helping people to direct their own lives by reason and conscience so that they will, while exercising their own powers to the full, perform their social functions better; and, in how far are they influential in helping persons not only to defend the right to be themselves but also to recognize the obligation to refrain from interference with the rights of others? The greater the service medicine can render to society in these two main directions—that of facilitating the free and harmonious exercise of their functions by the social units and that of harmonizing the activities of these units so that in society there may be fairness for all—the larger will be its social import.

Medical investigators in their studies of physical diseases and of abnormal thought, feeling and behavior have discovered and described enormous numbers of physical and mental maladies and irregularities. They have, too, more or less successfully inquired into their causes, and they are ever striving to follow in series the links in the chains that connect these causes with those ultimate consequences that we know as signs of structural change and as symptoms of pathological functioning. The causes that they find are sometimes defects in the original make-up of hereditary qualities, sometimes malign influences—physical, chemical, biological or social—in the environment and more often still a combination of faulty hereditary tendency with environmental injury. And among the consequences of abnormal function it is always interesting to observe in how far the damage to the individual and the corresponding hindrance to his welfare impair also his social usefulness, or, as they do in many instances, make him actually a social menace. We know that physical disease involves both personal and public loss. Malaria and yellow fever not only prostrated their victims, but they prevented for a long time the development of Cuba and the building of the Panama Canal. The tubercle bacillus, the Treponema pallidum and the hookworm render miserable those who are personally attacked by them; they also are an economic drain and they exert a dispiriting influence upon the families of the infected. Similarly, mental diseases and abnormalities are subversive of both personal and collective good; the insane, the imbecile, the criminal and even the psychoneurotic lead imperfect lives themselves; but, besides, they lessen the happiness and increase the expenses of the families they belong to and they often seriously endanger general welfare in the communities in which they live. It is to the credit of modern neurology and psychiatry that they have done much to further social progress by changing our attitude toward social offenders. In the perpetrators of social evil they have sought the true causes—physiological, psychological, economic, social—of their moral obliquity, and are pointing the way to remedies that those flooded with the passion of punitive hate could scarcely find. Medicine, long ago discovering the rôle of natural law in disease, rescued the physically sick from those who would exorcise demons; later, she redeemed the insane from the cruelty of the moralistic judgment, the fetters unbound by Pinel remaining, let us hope, permanently unloosed; now, through the light shed by psychiatry, she is extending her scientific view so

as to include the criminal, the vagrant and the perverse, and will doubtless advantageously influence penology by gradual rationalization of the code of condemnation. Indeed, the rescue of "sinners" of various types seems to fall within the province of the physician, greatly enlarging the territory in which his functions find exercise. But in rescuing such "sinners," medicine does not approve of their unnecessary multiplication. Medical men, observing among social units, along with the fit, the many that are "notoriously unfit," will be among the most diligent of those who educate to social action that will gradually lessen the numbers of the latter. The results of medical inquiries do not indicate, however, that it is desirable to have a society composed of individuals who are all alike, identical copies of an original pattern, no matter how perfect that pattern might be. For what could be more depressing than the thought of a multitude of human beings with precisely the same natures, possessing the same hereditary qualities in exactly the same degree, all reacting to environmental influences in one stereotyped manner. The very idea is enough to excite horror. No; for the attainment of the highest good in human society diversity rather than identity of form and function is necessary, and for this variety Mendelian heredity fortunately provides. Nor can medicine ever hope definitely to describe every possible combination of germ plasms that will result in native qualities that will ensure physical and social fitness. It has, however, already discovered laws of inheritance that account for at least many instances of physical disease and deformity, and for some of the flagrant examples of social maladjustment and pathological behavior. It has shown us very clearly that society, if it is greatly improved, must give more serious consideration than heretofore to the constitutions of its members as well as to the conditions under which they live.

Medicine, after calling to her aid many auxiliary sciences (biology, psychology, anthropology, sociology), and after prolonged and painstaking research herself, has learned much of the native dispositions common to all men and of their significance to human life. Among these native human inclinations may be mentioned the desire to be physically healthy; to protect and preserve the self and to propagate the kind; the desire to possess; the desire to associate with others; the desire to use the intellect; the desire to create and to enjoy beauty; and the desire for personal conduct that will satisfy conscience. In order that the individual may make the most of life for the self and that he may best serve society, his environment (including his education) should be such as to call forth reactions that will satisfy, in a harmonious and well balanced way, each and all of these fundamental human needs. This does nothing to preclude variety in occupation or in recreation, for in no two individuals are the native dispositions existent in the same order or degree; moreover, in their environment, no two persons are subjected to identical conditions. The possible permutations and combinations are infinite and permit accordingly of infinite variety in both human nature and human conduct for every human being is a unique person; there is and never will be another just like him! This, though a platitude, has ever to be reemphasized.

One of the most important of medical tasks, one that is socially highly significant, is that of advising persons regarding hygienic living. But, it may be asked, how, if no two human beings are alike—and it is desirable for the good of society that they should be unlike—can rules of living that are applicable to all be valid? Must not every man have rules that pertain to him alone? Must he not find, for himself, what diet, what exercise, what work, what association, what recreation and what conduct are best for him? To a certain extent this is true. There can, perhaps, be no universal dietetic-hygienic régime in the concrete. A Yankee in New England does not eat nor need the same diet as the darkey in Mississippi, nor are their actions in other respects identical. What is suitable and essential in habits and morals to the one need not be so to the other.[1] But despite the diversity in human beings, there are such similarities that it is possible, as we all know, to outline certain rules that are, in general, valid conditions for the preservation of bodily health and also certain rules that are, in general, valid conditions for the leading of a socially useful and a spiritually elevated life. In this limited sense, medicine can establish a universal physical and mental hygiene, even though the hygienic adviser in attempting to apply these universal rules to individual lives must know how to adapt them to each person's particular constitution and condition. The hygienic adviser should never forget the uniqueness of each human being. Because of the uniqueness of his hereditary qualities and of his surrounding influences, each person actually requires a special bodily hygiene, special rules for thinking and enjoying, and, yes, even a special code of morality. This is true of what we call normal persons; it is, moreover, increasingly true of the physically diseased, of the mentally disturbed, of the socially maladjusted, of the morally oblique, and of those who are deficient in feeling for beauty.

Who, then, has a larger or a more responsible function than he who undertakes, as the physician is now compelled to do, to act as personal counsellor to people in the conduct of their lives? How extensive should be his knowledge and experience, how great should be his power of imagining himself completely in the place of the person he advises—what has been spoken of as the power "to creep under men's skins"; and with what infinite tact must he be endowed if he is to be able to convince and to persuade! Can there be any doubt of the social significance of the performance of such functions, of the value to society of the performers if they do their work well?

It is upon the general practitioner of medicine, aided by the consultant and the specialist, that the bulk of this work of advising persons of diverse character, and in widely different conditions, as to hygienic living falls. It is to him that the people turn for counsel, especially when disease exists or threatens, but nowadays more and more also, in order that the bodily health and the capacity to work may be preserved, that mental functions may be exercised freely and that conduct may be conducive to personal and public welfare. He it is who watches the digestive, the circulatory, the respiratory, the hematopoietic, the urogenital, the locomotor, the nervous, the

[1] Paulsen, F., *A System of Ethics*. English translation by F. Thilly, New York, 1908.

endocrine and the metabolic functions, and determines when therapeutic intervention is necessary. He educates his patients to avoid everything that impairs these functions and to do everything that will strengthen and harmonize them. He warns when necessary against caprice in eating, against undereating, against gluttony, against the misuse of alcohol or tobacco. He teaches the importance of a balanced food ration of appropriate caloric content, the necessity of considering health as well as fashion in clothing, and the value for health, happiness and efficiency of a well arranged program of work, of leisure, and of recreation. He tries to stimulate the idler to fruitful industry, the spendthrift to frugality and the miser to liberality, for idleness, extravagance and avarice are vices that are both injurious to the person and harmful to social life. To those who have secured incomes that more than suffice for their biological needs, he points out the dangers of hypertrophy of the possessive instincts and encourages the promotion of the intellectual, social, esthetic and ethical interests. Indeed, the physician can often be most helpful to his patients in guiding them to sources of truth, to desirable companionship, to participation in community efforts, to the enjoyment of the beautiful in art and literature and to worthy conduct that conforms to more ideal standards. There are those who maintain that the domain of the physician does not extend beyond the body of the patient and its perfection. I cannot agree with them, but were we to accept their view, it might still be urged that beauty and grace in the body can be attained only through proper cultivation of the mind and spirit. Selfmastery is essential to bodily grace, and only when the soul is good and beautiful can the highest type of bodily beauty be realized. Moreover, in order that health of mind and body may be maintained, it is essential that the whole personality of the patient be developed in an allround and proportionate manner. Undue suppression of the sex interests, of the possessive interests, of the intellectual interests, of the social interests, of the interests in the creation and appreciation of the beautiful, or of the interests in right living, will react unfavorably upon either bodily or mental health, or both. Thus attention to all these interests must obviously fall within the province of the physician, and he who conscientiously strives to perform his duties to his patients does not neglect them. In lending his aid, however, to his patient in attaining to the realization of his total self, the physician will avoid making him too subject to his counsellor. The aim of the best hygienic educator will always be to lead his pupil to selfreliance and to independent selfdetermination.

Thus far I have referred chiefly to the social service rendered by medical investigators and medical practitioners. If time permitted, it would be interesting to review also the meaning and value to society of the activities of medical authors, medical teachers, medical organizers and medical executives, including the directors of hospitals, sanitaria and asylums, and public health officers. But I must have some regard for the limits of your patience.

I cannot, however, forbear some comment upon the importance to society of the activities of certain members of our profession who may be designated, perhaps, medical statesmen. By these I mean those medical men of large vision who, better than their fellows, see the importance of the promotion of the science and art of medicine for the progress of civilization, who devise new plans for improving the conditions of practice, teaching and research, and who are helpful in passing better laws and in establishing better institutions, educational and political, for rendering the state needed work of physicians and scientists more fruitful and more secure. These men are never ignobly content with the past or with contemporary achievements of the profession. They are the shakers of creeds, the questioners of dogmas, and the critical surveyors of received traditions. They see ever new goals that should be sought and they confront us with new problems—physical, mental, educational, industrial, social, international—that medicine can help to solve. They stimulate our interest and the interest of intelligent laymen in these projects; they prepare the plans for the work, and they find the men and the money necessary for these new ventures.

And finally, the examples in living set by medical men themselves can scarcely be without their value for society. Though they have their faults and many of the common human failings, medical men, through their knowledge and training, should be better able than the average man to order their own lives well, and, on the whole, I believe that they do. When they take care of their own health, marry happily, train their children sensibly, attain to economic independence, attend to their social duties, keep their intellectual interests alive, show their appreciation of the beautiful things in Nature and in the work of man and respect the rights of others, they become artists in life and their mode of living is worthy of social esteem. For example is better than precept and lends force to precept. Those whose business it is to inculcate the principles of hygiene—physical, mental or moral—will have a larger success if their own lives are not too discordant with their teachings. In the worthy satisfaction of his own fundamental needs, exhibiting restraint without undue restriction, and illustrating moderation that has no taint of meanness, each physician may strive to exemplify hygienic living in the larger sense and so further contribute to the social significance of his profession.

A distinguished Canadian jurist once remarked to me that any man might well be proud who belonged to a profession that deserved the high tribute paid to it by Oliver Wendell Holmes. The lines he referred to may be familiar to some of you, and perhaps I cannot do better than to close with them: "Charity," said he, "is the eminent virtue of the medical profession. Show me the garret or the cellar which its messengers do not penetrate; tell me of the pestilence which its heroes have not braved in their errands of mercy; name to me the young practitioner who is not ready to be the servant of servants in the cause of humanity, or the old one whose counsel is not ready for him in his perplexities, and I will expatiate upon the claims of a virtue which I am content to leave you to learn from those who have gone before you, and whose footprints you will find in the path to every haunt of stricken humanity."

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Choice of Operation for Inguinal Hernia

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"How do you do your hernias?" Only too frequently is the surgeon asked this question. The usual answer is, "So and so's operation," and the inquirer is quite satisfied. The real truth is that such a query should take an hour to answer. Hernia is not a simple disease. Its pathology is multiform and varied. No two are really alike. Consider the absurdity of classifying a small direct bubonocele, a sliding hernia and a large oblique scrotal hernia as one disease, and having but one surgical procedure to suit them all. That is exactly what is done in most clinics, and I feel sure that here lies the reason for the unduly large number of recurrences. Careful study of followup reports show that about six to eight per cent. recur. If operations in children are included the rate is considerably less. The true scientific surgeon should have not one or two, but a large series of operative measures at his finger tips devised, not for hernias in any broad sense, but to deal with each feature of the pathology as it is encountered.

Just exactly what is this pathology? Certain broader features are diagnosed before operation, the size, type, condition of the external ring, and if this ring is large, the examining finger can often acquire a little information as to the condition of the floor of the canal. However, the real pathological diagnosis is made only after the canal is laid open. We must consider:

1. *The sac.*—There can no longer be any question as to the etiology of oblique hernia. It can never occur unless there is a failure of obliteration of the processus vaginalis. The sac is preformed. Russell (1) has recently given an admirable summary of the evidence for this, as have Coley and others (2).

2. *Weakness of the endoabdominal fascia.*—The real internal ring is a hole in this fascia. This is the point where strangulation practically always occurs. There may be a diffuse thinning of this structure, or it may simply have too large a gap in it for the exit of the cord. Whether this is a cause or a result of the hernia is doubtful and has little bearing on the treatment.

3. *Conjoined tendon deficiency.*—The conjoined tendon is deficient or even absent in a majority of men with hernia. It is a commonplace to surgeons that they insert the inner row of stitches in red muscle, not into a tendon. It is also commonplace that this muscle does not insert on to the pubis behind the external ring, as one finds in the dissecting room. It inserts on to the lateral border of the rectus sheath at a variable distance up from the pubis. Polya (3) measured the amount of rectus thus bordering the canal in one hundred cases and his results are given in the following table:

CASES	LENGTH OF RECTUS	CASES	LENGTH OF RECTUS
1	0	17	4
7	1	9	5
31	2	5	6
28	3	2	7

Ferguson (4) made similar measurements as to the origin of the lower fibres and found that the same was true of the lateral end of the canal. These points constitute the real pathological anatomy of hernia. They should be looked for, noted, and only then can the choice of surgical procedure be made. These procedures may be roughly classified as follows:

1. SIMPLE SAC REMOVAL

In many cases it appears that the sac is the only pathology; all the other structures in the canal are found to be normal. In that case it is surely logical to say that the removal of the sac is all the operation indicated, and anything further is superfluous. As I shall attempt to show later, any further surgery may be positively harmful. In recent years a number of operators have been courageous enough to put this theory into practice, and the results have amply warranted the innovation. Hull (5), in charge of a large hernia service in the British Army during the war, did over five hundred such operations and said he had fewer recurrences than by other technics. He worked under local anesthesia, making an inch long incision over the internal ring, split the aponeurosis, made a high sac removal and closed the wound with a single stitch. Hoffman (6) did a large number and had but two per cent. recurrences. Sulzer (7) traced fifty and found no recurrences. This procedure has gained considerable favor in other German clinics. I have used it myself in a number of cases with apparently good results. I believe that this operation is indicated in the following classes of cases: a. Small recently acquired hernias, especially those encountered in military or industrial work, where they are discovered very early during routine physical examinations. b. Many hernias in children. c. The socalled phantom operations, the prophylactic operation on the well side of the young man with a congenital hernia on the other. In almost every one of these that I have done, I have been rewarded by finding a well developed, though empty sac on the apparently normal side.

2. BASSINI OPERATION

The general features of this technic need no description here. In brief, it consists of opening the canal, high sac excision, suture of the conjoined tendon to the inguinal ligament and closure. Some details, however, are important.

Completeness of the excision of the sac is not a guarantee that it has been done correctly. There is a wrong and a right way to do it. It is very easy to make a high sac removal and still leave a gaping hole in the endoabdominal fascia. We must carry our dissection so high that the transfixion and ligature include not only the peritoneum but this important fascia as well (Figs. 1 and 2). This structure can usually be recognized as a white opaque layer, quite distinct from the thin, transparent, glistening serosa. In many cases this cannot be done by the

ordinary methods. Torsion of the empty sac may help. Most surgeons give up here. If these methods fail nothing else is attempted. There are numerous methods of really closing this hole and they deserve wider recognition, as this is the crucial point in the whole operation. An old way I have found useful is to split the sac in two right down to its neck, lay the flaps wide open and then close the neck by a running suture exactly as one would in any other laparotomy wound. This is of special value in the type of cases in which the neck of the sac is very large, and not round but long and slit-like. In other cases careful dissection will expose the hole in this important fascia and it can be closed with a running suture. However, each case is a problem in itself. Pitzman's (9) suggestion of sewing the neck of the sac together with the traversalis fascia to Poupart's ligament is often of value. Opening the abdomen an inch above the canal and closing the ring from within (10), is another maneuvre which has distinct advantages. In every case in in which this inner ring closure has been difficult and where any doubt as to its completeness exists, the neck of the sac should be transplanted upward and outward and fixed to the abdominal wall away from the weak spot. This can be done very quickly by simply attaching curved needles on each end of the sac ligatures and bringing them out through the raised internal oblique as far as possible from the internal ring (Fig. 3).

It must be borne in mind that the entire success of the Bassini operation depends on the healing of the internal oblique muscle on Poupart's ligament. As stated above it is a fleshy red muscle, not a tendon. Much doubt has arisen of late if this really ever occurs. Certainly such a condition is rarely encountered in pathology. The only normal findings of such a condition are at the musculotendinous junctions. The object is achieved here by an exceedingly complicated and delicate structure. Seelig (11) discusses this point and reports some very interesting experimental observations. He was unable to achieve such a union in animals. The stitches promptly pulled through even if little tension existed. Permanent material yielded no better results than catgut sutures. McNealy (12) has noted a number of postmortem examinations of cadavers with old herniotomy scars. In no instance, whether the operation had been successful or not, had the red muscle remained attached to Poupart's ligament. Following the Andrews operations the external oblique had remained in place but the internal had pulled loose. Lameris (13) made similar observations. Oudenarde (14), after studying a large series of recurrent hernias, arrived at the same conclusions, and his very elaborate article closed with the following words in capital letters: *Le Bassini doit etre abandonnée.* I am not prepared to go quite that far yet but I do believe that its use is very limited. It does, however, afford a better means of making a complete sac removal than Hull's method, and I still use it in small hernias but am now very careful to make the stitches very, very loose. One fact is very disturbing to me. That is that so many oblique hernias recur in the direct form, at the inner end of the canal. I can give no other interpretation than that this means that the stitches we put in in this region have actually done harm instead of good.

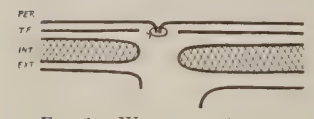

FIG. 1.—Wrong way to remove sac; peritoneum closed but hole in transversalis fascia left untouched.

FIG. 2.—Right way to remove sac; edges of transversalis fascia included in ligature.

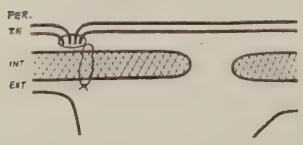

FIG. 3.—Stump of sac fastened to abdominal wall away from internal ring.

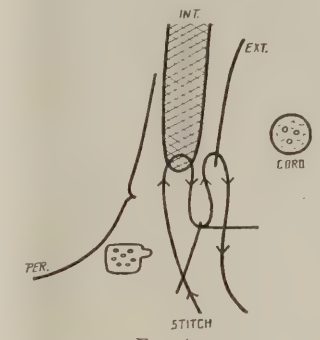

FIG. 4.

FIG. 5.

FIG. 4.—Stitch used in Andrews operation; cord lifted, stitch begins in Scarpa's triangle, goes under Poupart's ligament, takes bite of internal oblique, back through sharp shelving edge of Poupart's, then to external oblique, and out into Scarpa's triangle through lower fragment of external oblique aponeurosis.

FIG. 5.—Domeshaped bulging of direct hernia.

3. ANDREWS OPERATION (15)

This also is too well known to require description here. It consists, in a word, in sewing the internal and external oblique to Poupart's underneath the cord, replacing the cord in its new bed and making a roof for the canal with the left over lower flap of the external oblique aponeurosis. I now wish to describe a special suture used for this purpose (Fig. 4). It will be noted that all the knots lie outside the inguinal canal. This permits one to use much larger suture material and it has been the custom to use the heaviest kangaroo tendon. This reinforcing of the floor of the canal should be used in every case in which there is any evidence of weakness of the endoabdominal fascia, or if there is any muscular deficiency. This of course will include most old hernias and all large ones.

Here again we must not be satisfied with any routine, but must arrange and plan our structures to fit. This cannot be done in advance any more than a tailor could make a suit without taking measurements. One is often asked if he takes any stitches above the cord. This most certainly should be done if there is any gaping there. I make it a practice, however, if such a gap exists, to attempt to pull the cord outward and put the stitches under it. This actually angulates the cord, making a sharp upward kink in it. It also lengthens the canal, a most desirable thing. I have never seen any interference with the circulation after such a procedure.

Many other slight modifications are of value in suitable cases. Sometimes the edge of the external

oblique after being sutured to Poupart's, stands up in a series of ruffles between the stitches. Here, a small running stitch is needed to secure adequate approximation. If the cord is very bulky the Torek (16) method should be used. He divided it into two segments, and brought them through the floor of the canal separately. It is surely better to have two very small holes than one large one.

4. USE OF RECTUS

Nearly every series of recurrent hernias reported shows at least half of the recurrences near the pubic spine. This is our weakest point. In our ordinary methods of operating it is at this point that the tension is greatest. If the internal oblique inserts high up on the rectus sheath, and this point is pulled down and sutured to Poupart's ligament, the tension will be too great to permit healing. For this reason the rectus itself should be utilized in the closure in a far larger number of cases than is done at present. The sheath may be split and the actual red muscle pulled over to reinforce this weak spot (17), but this is open to the same objections as the Bassini, as stated above. The Halsted technic (18) for the use of the rectus sheath is far the best. A flap of this strong fascia is turned outward and produces the best possible covering for this danger spot. This step should be added to the Andrews operation in, a, all very large hernias; b, all hernias in which the conjoined tendon deficiency is extreme, and c, all direct hernias. I now use this additional safeguard about one quarter of the time.

5. DIRECT HERNIAS

The vast majority of direct hernias show little tendency towards growth. They are due to an enormous deficiency in the conjoined tendon and to a marked diffuse weakness of the endoabdominal fascia (Fig. 5). The sac is domeshaped and has no neck, and for this reason strangulation is almost unknown. The sac of an indirect hernia may lead preformed out through the external ring or its smallness and fingerlike shape favor its exit. Conditions are utterly different in the direct type. The massive wide sac has little tendency to protrude from the canal. In view of these facts I regard a direct hernia, not as a disease, but as an anomaly, perhaps comparable to potbelly. It is not in itself an indication for surgery. It is perfectly harmless in the vast majority of cases. Furthermore, it is far more amenable to truss management than other types.

Let us examine recurrence rate of direct hernia.

RECURRENCES IN DIRECT HERNIA[1]

Author	*Cases*	*Recurrences*	*Percentage*
Lameris (13)	102	29	28.4
Davis (19)	88	13	15.9
Erdmann (20)	383	52	16.6
Russell (1)	14	3	14.3
Taylor (21)	47	14	29.8
Average	634	111	17.7

[1]These figures are from some of our best clinics.

We have then a disease (socalled) which kills or incapacitates very rarely and in which one fifth of our operations are failures. Is it not reasonable, then, to say that we should operate only for special indications? These are growth or pain. Other conditions should be left alone and the patients simply reassured of the harmlessness of the condition.

6. CORD TRANSPLANTATION

This term, as it is now used, is a decided misnomer. To say that it is transplanting the cord to close the internal oblique beneath it is flying in the face of most elementary and evident anatomical facts. While the position of the cord in relation to the muscles varies within very wide limits, it surely has never been known to lie *under* the muscle. The operation of closing the internal oblique over the cord was devised by Ferguson (4) about twenty-five years ago. It never achieved much popularity except in the region under his own personal influence, and is almost unknown in Europe. Every series of cases followed has shown a higher percentage of recurrences by this method. It not only destroys the obliquity of the inguinal canal, by placing the internal ring directly under the external one, but worse yet, it leaves the weak spot next to the pubic spine. There are a few kinds of cases, however, where this operation is indicated. They are, a, in sliding hernias. These have a very high recurrence rate and practically always recur at the upper end of the canal, and the Ferguson operation leaves no weak spot here. b. In certain cases of cryptorchidism. If there is much difficulty in getting the testis into the scrotum on account of the shortness of the cord, a little may be gained by sewing the cord underneath.

The advantage of this procedure is its ease and simplicity. There is no doubt that crowding the cord downward and making the closure over it offers less difficulty than any other known method of herniotomy, and to this fact I attribute the persistence of this inferior method.

7. PLASTIC METHODS

Finally, it cannot be too strongly emphasized that herniotomy is a plastic operation. Its success depends on the union of structures which are not normally adherent. All the laws and all the limitations of plastic surgery apply equally to this class of work. The first law of plastic surgery is that no tension can be tolerated. That is a principle which no matter how unpleasant must be faced in the surgery of hernia. Any hole in the abdominal wall can be pulled together by the use of powerful tension, but just as surely as this is done the two structures are going gradually to pull apart again. Both theory and the results of our practice show this. Let us, therefore, not dodge the issue by drawing a curtain of skin over our clumsy efforts. If our stitches are too tight, cut them and fill the hole with a fascial transplant. Small transplants of this sort heal readily and their loss by sloughing is extremely rare. They can be tailored to fit the defect and made large enough to avoid any tension.

It is only by careful attention to detail, the use of a wide variety of surgical procedures, conservatism in simple cases, and radical work in hard ones, that we can expect to reduce the percentage of failures, which is bringing the operation of herniotomy into disrepute. This percentage is from six to eight, and when one considers the enormous number of patients operated on each year, there must be a multitude of dissatisfied patients.

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The author's references will appear in his reprints.

The Importance of the Direct Examination of Bile in the Diagnosis of Gallbladder Lesions*

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(*Concluded from page 13*)

On January 17, 1924, the patient was operated upon by Dr. De Witt Stetton. The findings were as follows:

There was a thickened whitish gallbladder with adhesions at the neck of the duodenum. No calculi could be palpated in the gallbladder, ducts or at the papilla. The surface of the right lobe of the liver adjacent to the gallbladder showed a definite inflammatory thickening of the capsule. The foramen of Winslow was patent. The pancreas was not indurated. The appendix was thickened and elongated and located below and to the inner side of the cecum. The distal half was free, but the proximal half bound down by dense adhesions. A cholecystectomy without drainage and an appendectomy were performed. The gallbladder was somewhat thickened, the mucous membrane distinctly papillary in type (beginning strawberry gallbladder). The contained bile was thick, somewhat turbid and dark green in color. The appendix was elongated, thickened, with hypertrophic mucous membrane and submucous hemorrhages. Microscopic examination (Dr. Bullock) showed chronic catarrhal cholecystitis, and acute and chronic appendicitis.

In contradistinction to these three cases of severe cholecystitis without gallstones, a case may be described having sandlike particles in the bile, with a crystal formation smilar to that in the cases cited, in which real stones were found. The history is as follows:

Case IV.—Mrs. A. F. about twelve years ago had an attack of severe sharp pain in the right side of the epigastrium, beginning suddenly and without apparent cause, in the morning, accompanied by nausea and vomiting. This lasted only an hour, and several months elapsed before she had a similar attack. Gradually the attacks became more frequent and more severe, the pain spreading around to the back and up to the shoulder blade on the right side. After one attack of vomiting the cramps in the shoulders and arms were so severe that she was unable to move them. She stated that with these attacks she would usually have a chill (hot and cold sensations). Once, some eight or nine years ago, she became jaundiced for three or four days. She had always been constipated. Had not noticed blood in the stools, nor clay colored stools. Her vomitus was never bloody but was often green and bitter. About six years ago she started taking some patent medicine and stated that she had been absolutely free from her attacks for four years. After the birth of twins a year and a half ago, her trouble started again. She had a severe attack the night the twins were born, and another the following night. From then on she had had attacks at almost weekly intervals, each one more severe than the last. Lately they had occurred twice a week. She said that during the last nine years she had taken morphine during every attack. Atropine was given to her during the last few months. Belching of gas always accompanied an attack.

Her gastric contents showed a high acidity, totaling 86; the string test showed a blood stain at twenty-two and one half inches from the lips; the bile was turbid, containing blackish sandlike concretions, showing microscopically cholesterin, calcium bilirubin, and "bunch berry" crystals. The patient had another attack of probable gallbladder colic while undergoing the examinations, requiring morphine.

An operation was decided upon and was performed by Dr. De Witt Stetton. The gallgladder was found slightly adherent to the duodenum and contained six stones each about the size of a bean, yellowish in appearance. The scrapings from the surface of one of these stones consisted principally of amber looking "bunch berry" crystals. (Fig. 44.)

In conjunction with these remarks regarding diagnosis a few words on treatment will not be superfluous. Everyone is acquainted with the general principles of treatment in most gallbladder lesions. These are rest, frequent small meals, plenty of fluids, regulation of the bowels, and medicaments or other means to increase the flow of bile. Mineral waters, especially those having laxative qualities, are of benefit. Some clinicians think highly of the salicylates; others recommend instead glycerine or olive oil; still others ascribe great value to the method of draining the bile through a duodenal tube, especially after magnesium sulphate or similar substances had been given, increasing the flow of bile. In a number of mild gallbladder lesions, similar régimes will accomplish the desired effect.

With regard to diet, I am not in favor of restricting the variety of foods too greatly. This I say because a great many physicians forbid all food substances containing much cholesterin, such as eggs, fish, etc. While cholesterin is found in gallstones, their formation is not always due to the abundance of cholesterin in the food but rather to an abnormal state of the bile.

In an exceptional number of instances of gallstone colic in which an operation appears demanded, nature can yet accomplish a cure without resort to surgery. This is effected by the formation first of adhesions between the gallbladder or biliary tract and duodenum, and then by the breaking through between the gallbladder wall or the walls of the ducts into the duodenum (without leakage into the peritoneal cavity), creating an opening for the passage of the stone so that it can be passed through the intestine. Such an occurrence took place in the case

*Read before the Newark Academy of Medicine, February 13, 1924, and before the Greater New York Medical Society, on April 21, 1924.

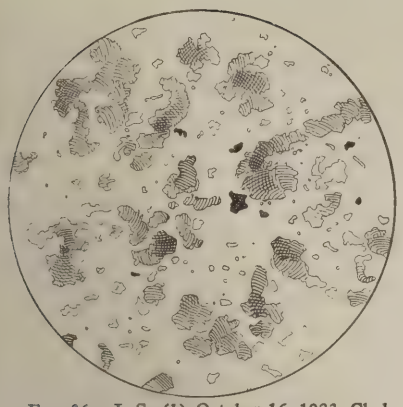

FIG. 36.—J. S. (*b*) October 16, 1923. Cholesterin, calcium bilirubin crystals and mucus.

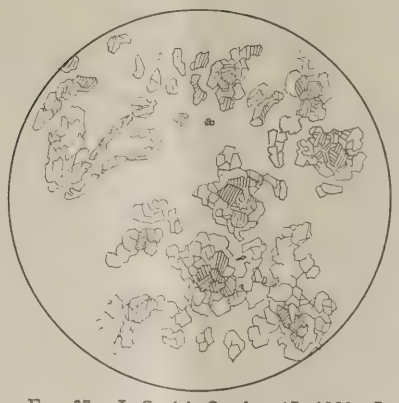

FIG. 37.—J. S. (*c*) October 17, 1923. In the bile cholesterin and calcium bilirubin crystals.

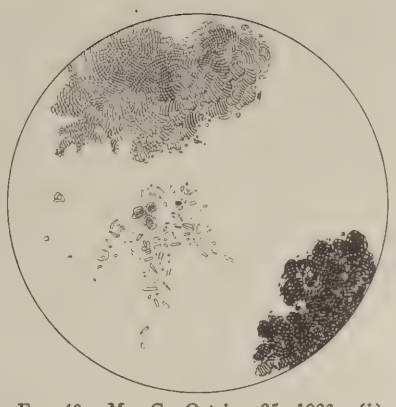

FIG. 40.—Mr. G. October 25, 1923. (*b*) High magnification. Bunchberry crystals.

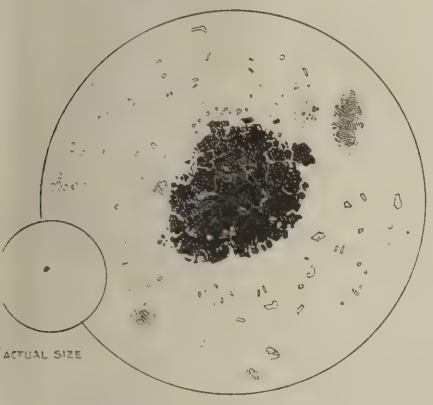

FIG. 39.—Mr. G. (*a*) October 25, 1923. Low magnification. Bile dark yellow, greenish tinge. Black sandlike particles containing calcium bilirubin and cholesterin crystals.

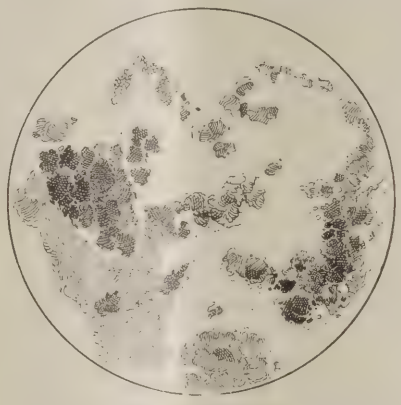

FIG. 38.—J. S. (*d*) November 2, 1923. At the operation a pinhead size concretion was found in the bile flowing out of the choledochus showing the bunchberry appearance.

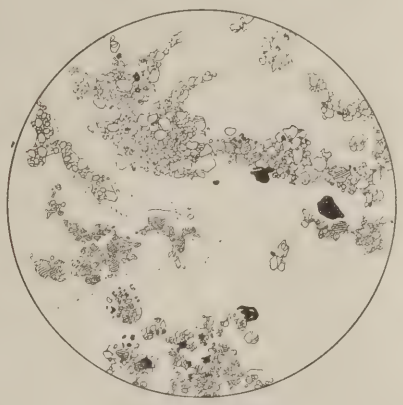

FIG. 41.—Mr. B. December 18, 1923. Bile dark yellow, turbid; blackish sandlike particles containing cholesterin and bunchberry crystals. (No operation.)

FIG. 42.—G. November 27, 1923. Bile light yellow, very turbid. Blackish particles; black crystals, some cholesterin and mucus.

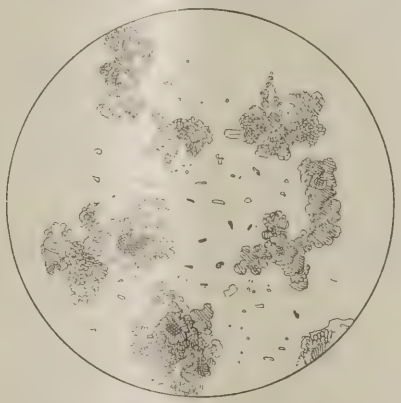

FIG. 43.—F. October 9, 1923. Dark brown yellow, very turbid; calcium bilirubin and cholesterin crystals; mucus.

FIG. 44.—Mrs. F. January 14, 1924. Scraping gallstones found at operation; cholesterin, bunchberry and rhomboid crystals.

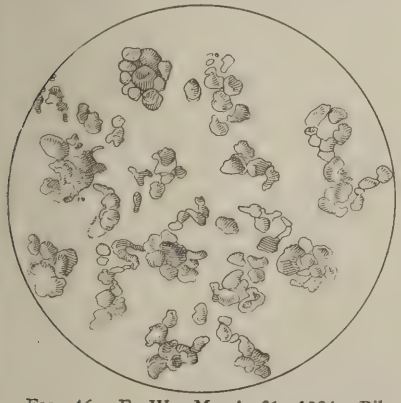

FIG. 46.—F. W. March 31, 1924. Bile turbid, containing sandlike particles, consisting of bunchberry crystals.

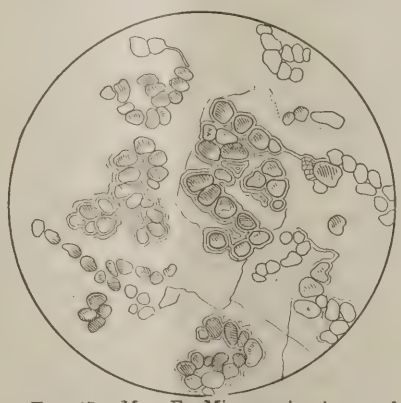

FIG. 47.—Mrs. F. Microscopic picture of scrapings from gallstones, removed by operation on Jan. 14, 1924. Bunchberry crystals.

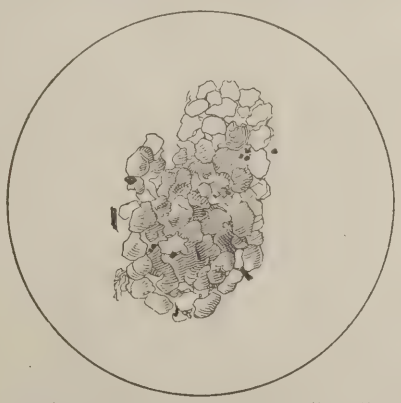

FIG. 48.—K. March 6, 1924. Bile yellow brown, turbid. Brownish particle containing bunchberry crystals.

of Mrs. M. while she was under observation in my care in the Lenox Hill Hospital. Her history is as follows:

Case V.—October 23, 1922: Mrs. M., aged about forty-six, complained of pain in the right epigastrium for the past year. She stated that she had been troubled with bilious attacks for the past ten years, accompanied with much vomiting of bile. She suffered no great amount of pain until a year ago when pain in the right epigastrium became a prominent symptom. The patient had been free from these attacks of pain for many months. The pain was of a dull gnawing character, beginning just after eating; relieved a great deal by bicarbonate of soda. The pain starts in the epigastrium, extending gradually around to the back and up to the shoulder.

Blood examination: white blood cells 6,800; polymorphonuclears 72 per cent; lymphocytes 24 per cent.; mononuclears 4 per cent; red blood cells 5,400,000; hemoglobin 90 per cent. The gastric contents showed: hydrochloric acid 5; total acidity 65. String test: blood stain at 23 inches; bile from 24 inches to end.

Examination of the bile showed it to be very turbid, containing many red blood corpuscles, pus, cholesterin, and bilirubin crystals.

X ray examination of the teeth showed extensive pyorrhoea. X ray examination of the stomach: Stomach and intestines appeared normal, except that pyloric end was held permanently to right notch in duodenum produced by distended gallbladder, sensitive area over gallbladder region, hepatic flexure of colon adherent to gallbladder region. Diagnosis: Cholecystitis; pyloric end of stomach adherent to hepatic flexure of colon. No gallstones visible. I am indebted to Dr. Gibbons of Scranton, Pa., for this x ray report and for referring patient to me.

The examination of the bile showed that there was some bleeding going on in the duodenum, rather more than is usual with ulcers. In the stool passed a few hours later, which was sifted, was found a gallstone about the size of a medium sized acorn, which relieved the symptoms. The perforation was evidenced by the bleeding in the duodenum at the time of the passage of the stone. The patient has remained apparently well ever since (for I have not heard from her).

Unfortunately, we cannot always count upon this favorable occurrence, and it is usually necessary to recommend an operation in suitable cases.

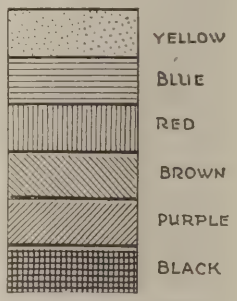

Fig. 45.—The colors in most of the figures are indicated by the different shadings shown above.

INDICATIONS FOR SURGERY

1. Severe abdominal colic due to gallbladder lesion, accompanied by temperature, leucocytosis, and a high polymorphonuclear count.

2. Severe biliary colic, necessitating hypodermic injections of morphine, accompanied by chills and fever, or occurring frequently so that there is danger of acquiring the morphine habit.

3. Whenever empyema of the gallbladder is suspected.

4. When malignancy cannot be readily eliminated.

In short, it may be said that patients should be operated upon only when there are severe subjective symptoms present in connection with the objective findings, and prolonged medical treatment proving of no avail.

REFERENCES

1. Einhorn and Meyer: Diagnosis and Treatment of Recurrent Cholecystitis Without Stones. *Medical Record*, August 7, 1920.

20 East Sixty-third Street.

Kidney Function in Osteitis Deformans

Report of a Case

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Impairment of the kidney function in advanced osteitis deformans (Paget's disease) appears to be a rather constant finding. While a review of the literature shows this condition to be present in most cases, no special notice has been taken of it. In the majority of instances it has been mentioned only incidentally in the case reports. The following advanced case of osteitis deformans with typical changes in the skeleton presents a rather marked impairment in this respect.

Case.—J. D., a man, aged seventy-seven, seen October 17, 1922, complained of attacks of palpitation lasting from ten to twenty minutes. There was no pain associated with the attack, but the rapid beating of the heart disturbed him and he felt weak. These attacks had been present for several years.

For the past five years the patient had been using crutches on account of the increasing curvature of his legs. He was able to walk without this aid but not so rapidly. He was able to get up and down without difficulty. Although the deformity of the skeleton was marked, the patient did not complain of any discomfort from it except the awkwardness in walking. The condition had its onset in 1905 when he noted pains in the legs. The next year bowing of both tibiæ developed, starting first in the right tibia, in which it has always continued more marked. At that time he was sixty years of age, and had retired from his business in a bank where he had been on his feet during most of the day. In 1916 he noted that his head began to get larger. The increase in size had been gradual, so that the size of his hats had increased from 6⅞ to over 8¼ which he was wearing. With the increasing bowing of his legs he had lost six inches in height. He had noted no pains since the onset except occasional aching in the shoul-

ders and arms. For the past ten years his vision and hearing had shown increasing impairment.

The patient's father died of stomach trouble, and the mother from an abscess in the abdomen. One sister who died at sixty-five years of age had the same disease of the skeleton, but with more marked deformities. She had had the disease for many years, and became totally deaf before she died. One brother also had a very large head, but no noticeable deformity of the legs.

Fig. 1.—Patient with osteitis deformans showing enlargement of skull with prominent overhanging brows.

The patient had been always healthy and had had no acute illness in his life except an otitis media at sixty-two years of age. Since the onset of the osteitis a rather marked arteriosclerosis had developed, and accompanying this an increase in the blood pressure with cardiac hypertrophy was noted. Several years ago there were repeated retinal hemorrhages in the right eye. Albumin had been present in the urine for the past six years.

Examination showed the patient to be in fairly good health considering his advanced age. As a result of the osteitis marked deformity of the skeleton was present. Probably the most striking feature was the enlargement of the head with the prominence of the parietal and frontal eminences. The forehead was large and the brow overhanging (Fig. 1). Both clavicles were prominent, thickened, and sharply bent. The spine showed very little curvature, and was not rigid. The iliac crests were large and flaring. On standing the deformity of the legs was particularly marked. Both femurs were thickened and bowed outward, and both tibiæ were markedly increased in size and bowed anteriorly as well as outward. When standing with the feet together the internal condyles of the femurs were fourteen centimetres apart (Fig. 2). The circumference of the head was sixty-four centimetres, and the distance from ear to ear over the vertex was thirty-six centimetres. The patient's height was five feet three inches.

Associated with these deformities of the bones, there was a marked sclerosis of the peripheral vessels. The pulse was irregular in rate and force, the blood pressure 154 systolic, 95 diastolic. The cardiac dullness was increased, the left border being an inch beyond the nipple. A loud systolic murmur was heard over the entire precordium, but was best heard at the aortic base. No abnormal neurological findings were present except the impairment in vision and hearing. Ophthalmoscopic examination showed both discs to be somewhat hazy in outline, and the retina to be pale. The vessels showed considerable sclerosis, and in the right eye there was an old choroiditis with evidences of old hemorrhages.

Laboratory examination of the urine showed a heavy trace of albumin and many hyaline casts. The volume for twenty-four hours was 960 cubic centimetres, the specific gravity 1.016 and the reaction acid. A kidney function test showed an excretion of ten per cent. of phenolsulphonephthalein in two hours on one observation and fifteen per cent. on a second observation. Chemical examination of the blood (1) on November 10th gave 26.5 mg.of urea, 2.8 mg. of uric acid, 56 mg. of nonprotein nitrogen and 1.4 mg. of creatinin to the hundred cubic centimetres. On November 25th the tests showed 4.0 mg. of uric acid and 1.02 mg. of creatinin, and on December 12th 15.5 mg. of urea, 4.5 mg. of uric acid, 46.2 mg. of nonprotein nitrogen and 1.8 mg. of creatinin to the hundred cubic centimetres. A blood count showed 90 per cent. hemoglobin, 5,120,000 red cells and 7,000 white cells. The Wassermann test was negative.

A röntgenogram of the skull showed marked involvement. The normal dense appearance of the calvarium was entirely lacking, being replaced by a motheaten rarefied structure. The skull varied in thickness from one to one and a half inches. Similar rarefication was noted in the pelvic bones, the vertebræ, the tibiæ, femurs and clavicles. The large arteries of the extremities showed extreme calcification being outlined for their entire length.

COMMENT

Although the urine shows nothing distinctive in osteitis deformans, not infrequently albumin is found. Generally only a faint trace is noted. Accompanying this are found hyaline casts and occasionally pus cells. The specific gravity varies from 1.014 to 1.024. The presence of albumin has been reported by Fitz (2), Lyons (3), Stahl (4), Stivelman (5), Carman and Carrick (6) (twelve cases), Ely (7) (two cases), Gaenslen (8), Goldstein (9) (seven cases), and many others. Hyaline casts were noted by Lyons, Gaenslen, and Goldstein. Epithelial and granular casts were reported by Stahl. Carman and Carrick noted occasional pus cells in four cases and occasional red cells in one case. Negative findings were reported in one case by Lewin (10), and in three cases by Carman and Carrick. In general the urinary findings are those of a chronic interstitial nephritis.

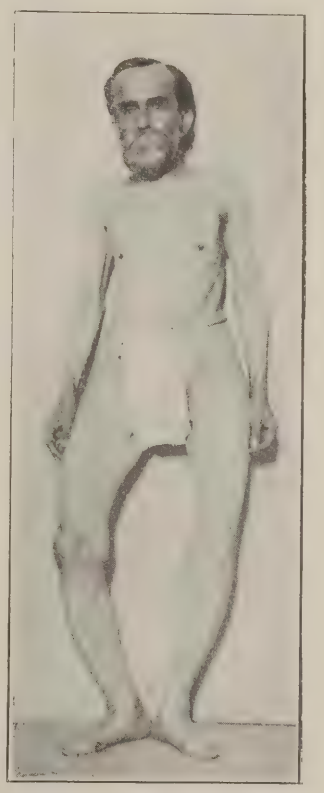

Fig. 2.—Patient with osteitis deformans showing marked bowing of legs.

The excretion of phenolsulphonephthalein was rather low, being only ten per cent. in two hours on one observation, and fifteen per cent. on the second

test. This would indicate considerable damage to the kidney tissue, and some evidence of it could be expected in the retention of protein waste products which was found to be true. Only one report in the literature, that of Carman and Carrick, gave the results of this test. They reported the excretion normal in two cases and in a third thirty per cent. in two hours.

Chemical examination of the blood showed only slight retention of protein waste products. This was probably due to the rigid diet and strict attention to the elimination. The urea is slightly above the normal of fifteen mg. to the hundred c. c., but is not a sufficient increase to be significant in itself. However, the finding of 4.5 mg. of uric acid as compared with the normal of two mg. to the hundred c. c., would indicate an early diminution in the functional capacity of the kidneys. Goldstein reported similar results in two cases, in one the urea was twenty-five mg. and the creatinin 1.3 mg., and in the other the urea was twenty-five mg. and the uric acid 6.6 mg. to the hundred c. c. Such slight increases in uric acid and urea are seen in the early stages of chronic interstitial nephritis and in arteriosclerotic changes of moderate degree in the kidneys.

Postmortem studies of the kidneys in osteitis deformans have been reported by Higbee and Ellis (11), Cone (12), and Goldstein. More or less marked interstitial sclerosis was present in each case. This would be in agreement with the clinical findings detailed above.

It is doubtful if the impairment in the kidney function has any etiological significance in the development of the bone changes. It appears more likely that the kidney changes are secondary, or at least an associated condition. It is possible that the causative factor producing the bone changes also affects the kidney so that sclerosis of an interstitial type results. With the characteristic thickening of the arteries in this disease due to the marked deposit of lime salts in the walls, it seems probable that similar arteriosclerotic changes occur in the kidney vessels and that the clinical findings of impaired kidney function could be explained on that basis.

301 DUGAN-STUART BUILDING.

The author's references will appear in his reprints.

Phlebitis and Thrombophlebitis Migrans*

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Phlebitis migrans is an inflammatory affection of the veins the outstanding feature of which, as its name suggests, is its migratory character. Clinically, this condition is distinguished by the following: 1. A tendency to involve superficial veins, especially of the upper or lower extremities, notably the internal or external saphenous, not infrequently also those of the trunk and chest. 2. A decidedly segmental distribution with healthy vein intervening. 3. A progressive spread which is usually accompanied by moderate fever. 4. A lesion having the appearance of an erythematous fusiform nodular mass about two to four cm. in length and one to two cm. in diameter, which is sensitive to touch. The overlying skin may be distinctly edematous, although at times pale and free from signs of inflammation. Pathologically, the inflammation may be confined to outer or middle coats of the vein, or both, in which case no impairment of the lumen occurs, and after complete subsidence of the inflammation no signs of previous involvement need be manifest. On the other hand, the outer, middle and inner coats may be affected, under which circumstances thrombosis may supervene with closure of the lumen. When such is the case, a hard cordlike thickening of the vein remains after the acute stage has subsided, unless canalization of the thrombus occurs. While in ordinary migrating phlebitis, which is confined to the superficial veins, no edema is usually seen, the occurrence of edema of the extremity involved is not infrequent if the thrombosis is sufficiently extensive and the affected vein is of considerable importance.

Whether thrombosis has or has not occurred, only the clinical course can disclose. The outward appearance of the vein, in the initial stages at least, is identical in both instances. In the strictly pathological sense, those cases in which thrombosis does not develop are called phlebitis migrans, and those which go on to occlusion should be called thrombophlebitis migrans.

PHLEBITIS MIGRANS.

Cases of phlebitis migrans as such are scattered through the literature associated with a variety of clinical conditions. Trauma, rheumatic fever, gout, toxic or cachectic states are not infrequently accompanied by this condition. Whether or not the phlebitis is caused by the same toxins which are responsible for the original disease, it is impossible to say. In rheumatic fever, the well known vulnerability of the cardiovascular system may perhaps account for the venous involvement. In gout, even though this affection is often seen in the vicinity of an acutely inflamed joint—the seat of a gouty arthritis—it may likewise manifest itself in a free interval of the disease. The deposition of urates demonstrated in the sheaths of the veins is no evidence, as Welch (1) observes, that gouty phlebitis is brought about in this manner. As a rule the recurrent phlebitis seen in this disease is not accompanied by venous obturation.

Quite another type of migrating phlebitis is to be found in syphilis. Instances of this have been re-

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corded by Neisser (2), von Proksch (3), Mendel (4), and others. Neisser describes a case of a laborer, who was first seen in November, 1902, with a fusiform swelling of the anterior surface of the right arm, painful on pressure and especially on movement, unaccompanied by enlargement of the axillary glands, or involvement of the lymphatics. There was no redness or edema of the superficial skin. A similar mass occurred on the opposite arm. Excision of the tumor showed a good deal of granulation tissue, in the midst of which the adventitia of the vein was seen with difficulty. The intima was found to be normal. No thrombi or fibrinous deposit could be observed. The microscopic examination showed swelling of the outer and middle coats of the vessel. A localized cellular infiltration starting about the vasa vasorum composed of plasma cells and lymphocytes, as well as newly formed bloodvessels, were some of the striking features. Mercurial treatment caused prompt disappearance of the lesions.

NONSYPHILITIC TYPES

Under the title of Phlegitis Migrans Nonsyphilitica, Gottfried Schwartz (5) discusses several cases of advanced pulmonary tuberculosis in which, under observation, fusiform swellings developed on the forearms which were regarded as phlebitic in nature. At autopsy the intima of the involved vein, as well as the muscularis, was normal. The elastica was stretched in several places, the media thickened throughout to almost two to three times its normal size by the proliferation of connective tissues, with considerable new formation of bloodvessels and cellular infiltration. In spite of evident inflammatory changes no microorganisms were found. In contrast to syphilitic phlebitis, therefore, the cell infiltration was much more profuse. In the luetic form, collections of cells were more closely grouped about the smaller vessels and interspersed between areas of relatively normal tissue.

RECURRENT PHLEBITIS

Quite in contrast to the types mentioned above that have to a certain extent been coexistent with disease entities which may perhaps be regarded as etiological factors, there is a group of cases apparently constituting a disease *sui generis,* which Briggs (6), describes under the title of Recurrent Phlebitis of Obscure Origin. These cases present a type of vein involvement that bears a strong resemblance to the types of recurrent phlebitis observed in gout or rheumatic fever.

In all, Briggs presents seven cases, remarkable as he states "for their spontaneity as well as identity of clinical detail." He concludes his observation with the statement that in going through the literature he finds numerous articles professing to deal with spontaneous phlebitis, analysis of which, however, proves that they are associated with anemia, cachexia, typhoid fever or other infections, as well as cases where there are other recognized factors in the production of thrombosis. He quotes Daguillon (7), who had described five cases presumably resembling such as he presented, as of the opinion that these had occurred in socalled nongouty arthritis and labeling them as due to the influence of a lithemic diathesis. In the twelve cases reported by Daguillon, three patients died of embolism, and six were afflicted with embolic phenomena of varying severity. Daguillon's conclusions are, that there is "a primitive form of phlebitis, i. e., one without any immediate determining cause," and that such phlebitis is an indication of a general diathetic influence, shown in an arthritic constitution, with or without actual gout.

Briggs is disinclined to accept the applicability of Daguillon's observations to his own cases, and submits the opinion that these were based on a phlebosclerotic condition, rather slight to be sure, but present in all the vessels which he has been able to examine. He emphasizes that sclerosis of the veins may progress intermittently, at times with great rapidity. He disagrees with Daguillon as to the gravity in the progress, and considers that the majority of instances which occur are usually so mild that they are not reported. It would seem from this that Daguillon makes no distinction between phlebitis as such and phlebitis with thrombosis. Although superficially, as has been mentioned, the clinical appearance of both is the same, the essential point is that simple migrating phlebitis does not lead to embolism and its consequences.

SIMPLE MIGRATING PHLEBITIS

More recently records of simple migrating phlebitis have been reported by Phillips (8), in a young acromegalic, with a fatal issue, and by W. W. Herrick (9), in an old lady of sixty in whom the migrating process was manifested in the lower extremities as well as in the superficial epigastric veins. The latter finally disappeared without any residual thrombosis, thickening, edema, or pigmentation.

In this connection, it is of interest to note a case which Connor (10), reports, that of a man who had an idiosyncrasy to fish and shellfish, the consumption of which was immediately followed by redness, tenderness and swellings along some part of the course of the internal saphenous vein of one or both legs. Here apparently was a case of sensitiveness to a foreign protein, with resultant disturbances. Thus we see that in the course of a number of clinical conditions, spontaneous affections of the veins may arise, for which we have little explanation, and which may lead ultimately to a variety of complications more or less serious. In the course of the last few years a number of cases have come under my observation, two of which present a pathological involvement of the veins of sufficiently unusual clinical interest to become the subject of this report.

CASE HISTORIES

Case I.—I. O., a male nurse, presented himself in November, 1920, complaining of pains in the calves of both legs, along the inner surface of both thighs, and in the right popliteal space. These pains came about rather suddenly the day before admission to the hospital while he was up and about working. At the age of thirteen he had had "rheumatism" with involvement of all the joints. This was complicated by valvular disease which, however, had not given him much trouble. In 1910, while in Africa, he had another socalled rheumatic attack with joint involvement, which gradually subsided. He thought that he was again afflicted with rheumatic

fever. He stated that at the onset his legs were swollen and painful, especially on motion. The general swelling disappeared, but erythematous nodules on the calves of both legs and several spots on the adductor surface of the left thigh, painful to the touch, remained. He presented no other symptoms except some cardiac palpitation.

Physical examination revealed a rather poorly nourished individual with slight exophthalmos, and marked arterial pulsation in the vessels of the neck. His heart was much enlarged, fifteen centimetres to the left and seven to the right. At the apex was heard a systolic murmur which was also perceptible at the base and transmitted to the vessels of the neck. A diastolic murmur was likewise heard in the third left interspace. The lungs were negative. The spleen was enlarged two centimetres below the costal margin.

The upper extremities were entirely negative, while the lower manifested patches of erythema two to three centimetres in length, 1.5 centimetres in diameter, elliptical in outline, following the course of the superficial veins on the inner side of both calves to about the midline posteriorly. There were three nodules along the inside of the right thigh, two on the left along the adductor area, and several on the external aspect of the left thigh a few inches below the gluteal fold. These were raised, very red centrally, gradually shading off into healthy skin, and sensitive to both touch and pressure. Accompanying this was a temperature of 100°. The veins below the affected area were cordlike. The blood pressure was systolic 125, diastolic 40. Wassermann reaction was negative, the blood count normal. Repeated blood cultures were also negative.

Under observation the nodules gradually disappeared. The tumefaction became less marked and the erythema disappeared. Two months later, nothing but somewhat cordlike thickenings remained. At no time was there any edema or swelling of the extremeties. Four months later practically no evidence of the involvement remained and the patient was up and about at his work. Excision of one of the nodules in the subsiding stage was performed. The microscopic sections showed evidences of periphlebitis. The fat around the vessel was invaded by round cells and fibroblasts. In one area the endothelium of the intima showed slight proliferation. No thrombosis or endophlebitis was present.

THROMBOPHLEBITIS MIGRANS

In contrast to this case is the following:

Case II.—S. G., thirty two years old, a canvasser by occupation, was admitted to the Mount Sinai Hospital on August 7, 1920, complaining of swelling of the legs for the past ten months and enlargement of the abdomen for three weeks. He suffered from what he called indigestion for eight years at varying intervals. He would get epigastric distress one or two hours after eating with acid and gaseous eructation. This was diagnosed as nervous dyspepsia.

On admission to the hospital he stated that ten months ago he began to have severe pain in the back of his right knee, which subsequently swelled. One week later the other leg swelled and on standing up the veins of his extremities became distended. On lying down the swelling subsided. Three months after the onset he experienced severe pains on the inner aspect of the left thigh, which also became swollen. Three weeks before admission he noticed a gradual enlargement of the abdomen and with it the epigastric pain and distress had become constant, radiating to the left chest and shoulder, and aggravated by the taking of food. He was habitually constipated, his appetite was poor and he had lost ten pounds in weight in three months. He had no symptoms referable to the cardiorespiratory or genitourinary tract.

Fig.—Patient in Case II.

Physical examination showed a poorly nourished male adult of about thirty-three, chronically ill. The right pupil was slightly larger than the left, but both reacted to light and accommodation readily. There was nothing abnormal in his nasopharynx, or mouth. Examination of the chest revealed dullness at both bases, especially on the right, which extended high up into the axilla. Here were noted distant bronchial breathing, and absent fremitus. The heart was normal. The peripheral arteries showed no thickening. The pulse was regular; and the blood pressure showed a systolic of 90 and a diastolic of 60. The abdomen was markedly distended—eighty-three centimetres in circumference at the umbilicus—shifting dullness and fluid wave being present. The upper border of the liver was at the fifth rib, the lower about four centimeters below the costal margin. It felt firm, had a somewhat irregular edge, but a smooth surface. The spleen and kidneys were not palpable. Rectal examination was negative. The patient's upper extremities showed nothing abnormal; in the lower edema of both legs. Examination of the blood showed white blood cells 8,400, polymorphonuclears sixty per cent., eosinophiles two per cent., basophiles one per cent., lymph thirty-six per cent., myelocyte basophiles one per cent. Subsequent blood counts showed no abnormalities.

Paracentesis abdominis was performed and three thousand c.c. of straw colored fluid was withdrawn of low specific gravity, the bacteriology of which was negative. Three days later the right chest was tapped and 900 c.c. of straw colored fluid was removed which was also negative. Gradually the veins over the chest became prominent. The enlargement began over the third interspace near the sternum, branching downward, joining the caput medusæ formed about the umbilicus. On September 10, 1920, there developed small ulcerations on the buccal mucosa one to two mm. in diameter which were very painful. About the same time small fusiform swellings three centimetres in diameter, hot and tender to the touch, which were diagnosed as localized areas of phlebitis, appeared on the inner side of the right thigh and lower part of the left leg. Thereafter, new nodules occurred from day to day scattered over both lower extremities and lower abdomen. Simultaneously with the development of new nodules, the temperature rose to 101° accom-

panied by a chill. On three occasions with pain over the hepatic area and distinct enlargement of the liver, the temperature rose to 103° and the chill was unusually marked. This was interpreted as being due to thrombosis of the hepatic veins. Blood cultures, both aerobic and anaerobic, taken simultaneously with the rise in fever, were repeatedly negative.

Gradually the symptoms subsided. Ascites disappeared. The dulness at the right base remained, but the breath sounds were distantly audible. The patient began to get better, he gained about ten pounds in weight and his liver receded from eleven to six centimetres. Laboratory investigations showed that the Wassermann reaction was negative, the blood chemistry normal, and the gastrointestinal x ray, as well as analysis of his gastric contents, were negative. Throughout, there was no evidence of jaundice. The patient was discharged with the diagnosis of migrating thrombophlebitis, with partial thrombosis of the hepatic veins.

Six months later he was readmitted to the hospital. Since his discharge he noticed a recurrence from time to time of new nodules, confined to the peripheral veins, especially over the abdomen. There was, however, no return of his ascites. This time he complained of marked pain in his left thigh, which was considerably swollen and edematous. There was obviously a deep thrombosis of the femoral vein on that side, with the surface veins considerably dilated. The superficial thromboses of the abdominal veins were especially marked, resembling nodules of erythema nodosum. Herpes of the mucous membrane of the mouth and small ulcerations on the scrotum, possibly due to venous thrombosis, were particularly annoying.

With the idea of the condition being a low grade bacterial infection, skin tests were done with various bacteria to see whether the patient reacted to any of the proteins of these. Mild reactions, mostly erythema, were obtained to Staphylococcus albus, Micrococcus tetragenus, Streptococcus viridans, and Bacillus coli. Vaccines are made of these organisms and a course of treatment instituted. The relief obtained as a result of the vaccines was transitory. For a number of weeks no new nodules appeared. In view, however, of previous spontaneous remissions, the freedom from symptoms during the administrations of vaccines was not stressed.

For the two months following the patient was under observation in the clinic, and during that time he had another attack of pain in the hepatic area associated with difficulty in breathing, enlargement of the liver, but no ascites. This soon subsided and the patient improved. The improvement, however, was transitory. He returned in February, 1922, with an enlarged abdomen, which obviously contained fluid, and several new nodules in the right lumbar region. He was again sent back to the hospital, where a paracentesis abdominis was performed. Thereafter, numerous new nodules of phlebitic origin recurred, scattered over the superficial abdominal veins. The ascites again supervened. He was tapped on March 17, 1922, only to have the fluid come back, necessitating its withdrawal on the 25th. On April 11th another paracentesis yielded about three quarts of bloody fluid, probably as a result of the rupture of the internal varices. In May he was considerably worse. The fluid had reaccumulated and on May 8th seven quarts, amber in color, were withdrawn. On the 22nd he passed four ounces of fresh blood by rectum. On the 28th he was tapped again. On June 6th three quarts were removed and on the 11th eight quarts. On the 19th paracentesis in the midline yielded some greenish material which on microscopic examination had the structure of cellulose. On going into the right flank a quart of fluid was obtained, indicating that it had become sacculated. Repeated cultures and smears of this fluid were negative. Following this last paracentesis, peritonitis developed and the patient died.

PATHOLOGY.

Although no postmortem examination was permitted, a nodule removed during the life of the patient presented a very striking picture. The vein showed a marked perivascular infiltration, characterized by numerous mononuclear and polynuclear cells. This exudate was most marked about the adventitia, although the media as well as the intima were involved. In one area of the intima marked proliferation of the endothelium was observed. Filling the lumen of the vein this outpouring of mononuclear and polynuclear cells was so dense as completely to occlude it, and in various places there was evidence of attempt at organizations of the exudate with fibroblasts.

The picture outlined above strongly recalled the early or acute stages of the specific lesion seen in the migrating phlebitis described by Buerger (11), which may occur months or years before the true condition, thromboangiitis obliterans, becomes manifest. Clinically, it may so dominate the situation that one loses sight of the underlying disease of thromboangiitis obliterans. Should the veins be examined microscopically in the early acute stages of the superficial phlebitic nodule, the picture according to Buerger is most characteristic. "The media, adventitia and perivascular tissues are infiltrated with polynuclear leucocytes and the lumen of the vessel is completely filled with red clots. In the peripheral portions of the clot, larger or smaller foci of leucocytes (purulent foci) begin to form, whose growth occurs by virtue of migration of leucocytes. Then certain peculiar giant cell foci develop and are characteristic. They contain giant cells, endothelioid cells or angioblasts and numerous broken down leucocytes. These foci then undergo connective tissue replacement. The giant cells gradually disappear; numerous small vessels are formed, the final product being a fibrous nodule containing vessels and some pigment." With this stage, of course, the healed or organized lesion supervenes. When that occurs in the artery as well, the development of fibrotic tissue in the adventitia binds together artery, vein and nerves.

Our case presents a certain similarity to the early stage of the phlebitis occurring in this condition, in the tremendous perivascular invasion, as well as in the exudative involvement of all the coats of the vein. One might venture to designate it as a prototype of the acute, or specific lesions of the phlebitis described by Buerger. In both, the etiology is obscure, but here the resemblance ends. In our case, no arterial disease was found. There were no giant

cell foci. In the veins, no angioblasts, no tendency to the formation of small vessels, none of the more or less characteristic fibrosis of the thromboangiitis obliterans prevailed. What is most important clinically, thromboangiitis obliterans, as far as is known today, is a disease of the vessels of the extremities, arteries and veins, and there are no cases recorded, where hepatic veins have been involved by this process.

DISCUSSION.

In searching the literature for analogous instances, one is struck by the fact that although descriptions of closure of the hepatic veins had been recorded, few present such a striking clinical picture of events as in Case II. Diagnosis of thrombosis of hepatic veins is not easy, especially when there are no peripheral thromboses to give a clue to the pathological processes going on within the abdomen.

Primary occlusions of the hepatic veins have been described by a number of observers: Budd (12) in 1846 was one of the first, Frerichs (13) in 1861, Eppinger (14) in 1876, Schuppel (15), in 1880. Chiari (16) in 1899 under the title of Obliterating Phlebitis of the large trunks of the hepatic veins as a cause of death described three cases. Umbrieit (17) in 1906 reported a case in which he found a chronic thrombotic process in the radicles of the large hepatic veins which gradually extended into the larger branches of the hepatic veins although he discerned no phlebitis.

Hess (18) in 1905 collected a total of twenty-five cases out of the literature in which the associated thrombosis of the hepatic veins was thought to be due to perihepatitis in five, hepatitis in three, thrombosis in one, trauma in nine, and congenital influences in one. He stressed the importance of opening the hepatic portions of the inferior vena cava and the hepatic veins and examining for thrombosis and obliteration. His own case was that of a girl of sixteen who was first admitted to the hospital at Prague at the age of twelve and discharged with a diagnosis of cirrhosis of the liver because of her ascites from which she recovered. She returned four years later, extremely cyanosed with a recurrent ascites, and markedly dilated veins over the abdomen which contained tender nodules (probably areas of thrombophlebitis). Both liver and spleen were enlarged. Death followed quickly. At postmortem, obliterations of the hepatic veins at the ostia in the inferior vena cava were found and obstruction of the hepatic veins in the liver. Acites and thrombosis of the mesenteric veins with hemorrhagic infiltrations of part of the small intestines were also present.

Hess concludes by saying that this was a case of very long standing. For years before, in all probability the patient had had an endophlebitis of the hepatic veins. Later she improved, due to compensatory circulation which, as the autopsy showed, had established itself. The endophlebitis continued, causing stenosis of the ostia to become more and more marked until ultimately complete obliteration occurred. This final obstruction preventing the outflow of the venous blood from the liver, marked the end of the patient, leading to the sudden and persistent ascites with exitus.

Since Hess's paper numerous other cases have been recorded. Very recently Hoover (19) has published two cases with similar histories and clinical pictures and Nishikawa's monograph contains a detailed description of the twenty-nine cases on record plus seventeen personally observed by him. All of them sooner or later presented clinical symptoms similar to portal obstruction, overshadowed finally by hepatic insufficiency.

Theodore Thompson and Hubert M. Turnbull (21) classify cases of hepatic vein obliteration into two clinical groups; one group with rapidly supervening ascites consisting of a transudate of low specific gravity, 1.004 to 1.014, acute enlargement of the liver, absence of jaundice or bile in the urine, and in the end evidencing extreme cyanosis though no cardiac dilatation is obvious; a second with a more gradual onset, with similar symptoms, the patients presenting themselves at a stage when the disturbance of the portal circulation with extreme symptoms appear.

Our case probably falls in the second group in which the course is progressively slow, and, similarly to Hess's case, the ascites subsides and the patient goes on comparatively well until the final act of decompensation.

SUMMARY AND CONCLUSIONS.

After comparing the variety of clinical and pathological data presented both by our cases and those of others, we note definite contrasts. We see instances of a disease process of the veins which in one stage shows itself as a mild migrating phlebitis without thrombosis ending in complete recovery. Others where thrombosis supervenes, affecting deep as well as superficial veins, leading occasionally to embolic phenomena of the heart, lungs, etc., and finally, cases where involvement of veins of larger calibre like the vena cava or the hepatic veins, takes place with progressive thrombosis which at the last usually leads to hepatic insufficiency and death. The diagnosis of thrombophlebitis of the hepatic veins is comparatively easy when the lesion manifests itself in the extremities first in a migrating form, provided all other of the above mentioned signs are present. That, however, is not always so. Closure of the hepatic veins may and often does take place independently of any outward manifestations of this disease, and altogether apart from a generalized migrating thrombophlebitis.

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Nonsurgical Biliary Drainage*

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The origin of the Meltzer-Lyon method of biliary drainage is traced to a statement which modestly appeared as a footnote in a publication by the late Dr. Meltzer in April, 1917. This footnote fell under the observation of Dr. Lyon, of Philadelphia, who developed therefrom a simple, precise, and highly scientific technic which holds much of promise in the diagnosis and therapy of biliary disease. That divers maladies should spring from biliary disorders is, of course, due to the fact that the bile itself has various functions to perform. The development, therefore, of a dependable method which gives physical access to the bile and thus permits unhampered study of its chemistry, was desirable.

Though bile is primarily an excrementitious substance and serves as such, it differs from the other excrementitious substances in the body economy, in that, through its ability to energize the activity of the pancreatic enzymes, it possesses a well defined power for promoting intestinal digestion. It also emulsifies, and by reason of its alkalies saponifies the fats, thereby aiding in their osmosis as they traverse the alkaline impregnated intestinal mucosa. It is to this virtue of hastening absorption that its antiseptic powers must be attributed. Or else, as Ott (1) tersely questioned, how can the bile prevent putrescence of intestinal contents, when it, itself, easily becomes putrid on standing?

Another function of bile of great importance to digestion is its help in destroying the pepsin, the activity of which, when unrestrained, weakens the proteolytic action of trypsin and erepsin. Bile has also a purgative action arising from its property of increasing the peristalsis and secretion of the intestinal mucosa. Is it at all surprising, in view of its multifarious activities, that the absence of bile from the intestinal tract should give rise to many ills?

Secretion of bile is continuous, though poured intermittently into the intestines in a quantity computed at approximately one thousand c. c., and varying directly with the number of meals a day—a condition of which advantage is taken in the treatment of biliary stasis. "A fasting stomach will not cause ejection of bile," says Bruns, from which it is evident why frequent though small feedings are given a patient in such conditions as achylia gastrica associated with cholecystitis, or where the surgeon desires to occlude a biliary fistula (2).

Because of its purgative action when injected into the intestinal tract, magnesium sulphate plays an important rôle in the Meltzer-Lyon method of biliary drainage. According to Hare (3) this action follows as a result of these three properties of the salt, that is, it depletes the intestinal bloodvessels, it stimulates peristalsis, and when dissolved, it is not readily absorbed. Indeed, the demonstration by Meltzer of the valuable purgative properties of magnesium sulphate has led to its widespread application as a therapeutic device. Soper (4) applied a twenty-five per cent. solution of the salt directly to hypertonic or contracted segments of the intestines, and proved conclusively that magnesium sulphate was capable of relaxing such contractures, thus providing a new and effective treatment of obstinate constipation. It is pointed out by Hare that Meltzer and others have shown that the intraspinal injection of magnesium sulphate into the subarachnoid space aids materially in controlling spasms of tetanus and often induces sleep. If the injection of this salt may have an effect sufficiently powerful to induce a state of complete inhibition, it is not at all surprising that, when applied locally, it should produce a relaxation of the sphincteric action of Oddi's muscle. This, in turn, according to Meltzer's theory of crossed innervation, is followed by constriction of the gallbladder and consequent ejection of the bile.

The technical procedure of effecting a biliary drainage is as follows:

1. The patient is to be studied after a twelve hour fast. The mouth is rendered approximately aseptic and the tube is sterile when passed.

2. The patient is placed in a right modified Sims's position with thighs well flexed on the abdomen—a posture to be maintained during the entire procedure. As much as may be secured of physical comfort, pleasant environment, and freedom from embarrassment is desirable, so as to overcome any inhibitory influences arising from psychic upsets.

3. The bucket of the tube passes through the pylorus and into the duodenum. According to Smithies the rate of deliverance by the pylorus does not vary with the individual habitus, this being contrary to the opinion commonly held for some time, that passage is more rapid in sthenic than in asthenic types. That passage has been effected may be ascertained as follows:

a. Aspirate and test with congo solution. If the tube is out of the stomach the solution is congo negative. Where it is known that a state of achlorhydria exists, test with blue litmus to ascertain the reaction; if acid, the bucket did not pass through the pylorus.

b. Introduce by syringe about half an ounce of water followed by several syringefuls of air so as to expel the water from the tube. Aspirate immediately. If the recovery of water injected is less than one third, the tube has entered the duodenum.

c. In some cases, borborygmus follows the injection of air. This is evidence of successful passage.

d. It is maintained by Jutte that where passage has not been effected, the administration of a little drinking water to which some bicarbonate of soda has been added, aids in relaxing the pylorus and facilitates the onward passage of the tube.

e. Fluoroscopic examination is *par excellence.*

4. Where a condition of vagotonia or a reflex state of pylorospasm prevails, making passage through the pylorus difficult, recourse is had to the administration of some antispasmodic such as atropine sulphate, or to a several days' use of bromides, belladonna or benzyl benzoate in appropriate doses.

5. After the bucket has entered the duodenum,

*Read before the New York Physicians' Association, May 23, 1923.

thirty c. c. of a twenty-five per cent. magnesium sulphate solution is injected slowly and permitted to remain for three minutes, whereupon aspiration is begun. By this procedure at least one half of the solution is recovered, thereby avoiding intestinal stimulation.

6. Drainage with magnesium sulphate solution is made from four to six times at each sitting, which should take place at six day intervals.

7. Both microscopic and cultural examination of the drained bile should be made immediately after aspiration. Prompt action is necessary in order to avoid digestion of epithelial pus cells and white blood cells, made possible by the admixture of the pancreatic juice and bile in the duodenum. Immediate examination will also obviate the problems arising from the possibility of symbiosis of nonpathogenic and pathogenic microorganisms. The former multiply with so much greater rapidity than their feebly reproducing associates, that delay in examination may permit the extinction or obscuration of the pathogenic bacteria, and thus an important point in the diagnosis may be lost. That microorganisms constitute a prolific cause of gallbladder pathology is indicated by the following observations made by Smithies: Of a given number of patients, viable colon bacilli were returned by 75.4 per cent.; staphylococci, by 14.9 per cent.; streptococci, by 5.26 per cent.; and yeast bacillus, typhosus, micrococci and indefinite organisms were found in 4.38 per cent.

8. Where drainage of the gallbladder cannot be effected, and the failure cannot be traced to a fault or break in the technic, the inference may be drawn that the flow is blocked by a cystic duct that is either partially or completely obstructed. In this instance, biliary drainage is not only, to a degree, diagnostic, but from the viewpoint of etiological therapy, is contraindicated.

9. Not all patients are suited for treatment by biliary drainage. This point is stressed by Smithies, Karshner and Oleson (5), who cite the possibility of a "physiological block" in the excreting apparatus —a phenomenon exhibited when the normal neuromuscular reflex fails to function. They mention, as obstructive of bile drainage, such factors as organic cord lesions, fatigue, apprehension of the procedure, or any disturbance which may arise in the course of the hepatic biliary system, conducive to a disruption of the reflex arc. Application of the Meltzer-Lyon method to a patient unsuited for the treatment, has often mistakenly led to its condemnation.

In concluding the description of the technic, it may be of interest to compare the method with that suggested by Kiralyfi (6) for the study of bile in cholecystitis. This method consists of gastric lavage of sterile water followed by the introduction, through a sterile tube, of a breakfast of 250 to 300 c. c. of sterile olive oil, which is removed after an hour and a half. The oil and bile tinged fluid, which by this time have entered the stomach, are separated—the oil, of course, rising to the top. This comparatively complicated procedure was intended to aid in the diagnosis of socalled obscure cases—particularly in suspected cases of chronic typhoid infections of the gallbladder. The simplicity of the mechanism of the Meltzer-Lyon method is emphasized by the comparison. Moreover, if we but recall some of the indications for which a cholecystotomy is practised, and for which the nonsurgical biliary drainage can be substituted, the serviceability of the Meltzer-Lyon method cannot, in truth, be disputed.

The pathogenesis of the gallbladder being in the main bacterial, our efforts must of necessity be initiated at such a phase of the malady as to render our work, in the main, of a preventive nature. That is to say, a mere symptomatology suggestive of a disturbance of the hepatic biliary system calls for treatment. Thus it is desirable that biliary drainage be resorted to at a stage of prepathology, and, most important, of precalculus formation.

It is pertinent here to recall the factors of calculi formation, viz., a suitable soil, a nucleus, formation of inflammatory débris, and solid constituents of the current fluid. The renal calculus is built of a nucleus, deposition or precipitation of solid constituents of the urine, whether normal or abnormal, layer upon layer, until it assumes the proportions of a stone. In pancreatic calculi the chemical constituents are carbonate and phosphate of calcium. Their origin, as pointed out by Elsner (7), is due to stasis and infection. The biliary calculus has a similar origin, being brought about by a phase of catarrhal cholecystitis, most probably bacterial in causation, and by epithelial desquamation, albuminous exudation, and increased formation of mucus and cholesterin. The Eberth bacillus has been known to furnish the nucleus. According to Musser (8), it is probable that the bacilli are agglutinated by the bile, thus establishing a nucleus for the formation of a calculus. It is at the conditions conducive to this nuclear formation that biliary drainage is largely aimed.

In his plea for a more painstaking diagnosis of chronic cholecystitis, Willy Meyer (9) draws attention to the number of authors who doubt the conclusiveness of the cholesterol test of the blood as a diagnostic agent in cholecystitis with stones, let alone cholecystitis without stones. He is quite emphatic in his belief that the analysis of the duodenal contents is an achievement that ranks as one of the greatest advances clinical medicine has made in the last half decade. He does not favor the use of the Meltzer-Lyon method for diagnostic purposes, yet holds that in the treatment of diseases of the biliary system the method will grow in importance.

The criticism directed at the method by Bassler, Lucket and Lutz (10) must, upon analysis, be dismissed because of the conditions under which their investigation was conducted. It is well to bear in mind that the Meltzer-Lyon method was built up primarily by dynamic study, from the observation of patients who retained full consciousness under treatment. Yet the cases selected by these writers, from a study of which they draw their conclusion of disapproval, were in every instance passive in nature—that is, with the patient under the influence of anesthesia. In this condition, muscular relaxation is a natural sequence. As an example, in deep narcosis an hour glass constriction of the stomach disappears. Similarly, in the cases cited by these writers, there was a break in the arc of the neuromuscular reflex, which disturbed the interrelation between the contracting gallbladder and the inhibitory action of Oddi's muscle. Thus, observations were made under

conditions where the "law of contrary innervation" —the very foundation of the method as laid down by Meltzer and built upon so ably by Lyon—was, for the time being, suspended. "The gallbladder," says the report, "was gently held in the hand of the operator for eight minutes. It did not contract nor diminish in size." Is it at all surprising that a muscular structure under the influence of a general anesthetic should fail to contract? The effect of this experiment, if any, is to fortify my belief that the Meltzer-Lyon method contains potentialities of great diagnostic and therapeutic value. Time and experience will bring them to fruition.

To my mind, Dr. Lyon is correct in his statement that the gallbladder is like the urinary bladder in function. The latter acts similarly as a reservoir out of which the urine is expelled by contraction of the detrusor muscle and corresponding relaxation of the sphincter. The only difference is that while the action of the urinary bladder is voluntary, that of the gallbladder is involuntary. The latter is thus under influence of the cerebrospinal system, which, in a condition of general anesthesia, simply inhibits, for the time being, the vital functions of the parts controlled by it. In this condition, inhibition of the gallbladder, not its contraction, should be the expected manifestation. It is hardly worth stating that nonsurgical biliary drainage is not intended as a substitute for surgical intervention in well verified diagnosis of gallbladder disease. I advocate mainly its inclusion in the routine of examinations along with urine and blood analyses and serological studies.

From the viewpoint of preventive medicine, according to Lyon (11) and his coworkers, the group of cases in the routine examination of which biliary drainage is particularly to be included, are those with a history of typhoid, influenza, recurrent attacks of tonsillitis, catarrhal jaundice, biliary migraine, severe headaches, and those cases "which have a progressive brownish pigmentation of the skin and which frequently show some jaundice of sclera and of the hard palate and cases of visceroptosis with biliary stasis from partial obstruction occasioned by traction on the supporting peritoneal attachments in the right hypochondrium."

Drainage is particularly effective in overcoming biliary stasis. Hence it is indicated in posttyphoid cases and in cases of gastric anacidity or subacidity where the bile tends to become static because the stimulus furnished by the normal flow of gastric juice is wanting. It is also effective in states of emotional jaundice (Meltzer) wherein the physiological storage of bile is converted into pathological stagnation.

Dr. Willy Meyer (13) points out a technical advantage that may be secured from a preoperative biliary study when the question of appendicular pathology arises. Such a study may aid the surgeon in making his decision "where to incise and what to excise." For, if preoperatively the surgeon be cognizant of pathological bile, he will cut down on the gallbladder region and pull the cecum and appendix up, in lieu of making an incision over McBurney's point and then investigate the gallbladder region.

Perhaps it is worth noting that where the presenting symptoms may indicate a choice of diagnosis as between biliary dysfunction and some other condition, there is a widespread tendency among practitioners to assume the former. And they regard efficacious treatment as confirmatory of the diagnosis. However, it is well to bear in mind that an apparent *propter hoc* may in such an instance be only a *post hoc,* and that further search would have revealed a different offender. In such cases biliary drainage would establish, at least, a negative diagnosis.

Dr. Kellogg asserts that he has derived valuable information from a study of the bile aspirated through the duodenal tube. He found it striking to compare the clear golden bile of the biliary tract with the turbid green or dark brownlike fluid containing flocculent mucus observed in pathological stasis. And this difference was often the point that sealed the diagnosis.

Hopkins (14), of Philadelphia, has shown that the duration of jaundice in a group treated by the new (Meltzer-Lyon) method averaged twelve days, as against an average of seventeen days in a group treated by the old method; that an average of only six and a half days of drainage was required to clear the jaundice, and that after the first or second day of drainage the patient underwent a symptomatic recovery. I believe, emphatically, that "the duration of catarrhal jaundice may be considerably shortened by the new and direct method of treatment; that if this method of treatment be applied at the first appearance of the jaundice, one may naturally expect a shorter duration than by any other method."

Speaking from my own experience in both the Vanderbilt and the Bronx Clinics, I have found that patients presenting a symptomatology of biliary stasis responded satisfactorily, on the whole, to a treatment which consisted of four to six successive biliary drainages at six day intervals. Some cases showed a complete arrest of symptoms, while at least a partial arrest was evidenced by the others. And, most important of all, in all my cases a cytological study of the bile obtained in the last drainage operation revealed none of the pathological elements found in the early drainages.

My experience with cases of frank icterus is substantially in line with that of Hopkins, given above. Response was especially prompt in cases of jaundice following salvarsan injection, i. e., arsenical poisoning. It is now my conviction that the old method of drug therapy should be discarded, whenever possible, for the Meltzer-Lyon method.

In conclusion, I wish to reiterate my belief that biliary drainage will grow in importance with use. I believe that its merits have been sufficiently established to warrant its inclusion in the routine of medical examination on a par with urine and blood analysis and serological study. When it is considered that as a diagnostic agent it may, on the one hand, lead to negative findings and thereby prevent unnecessary surgery; and on the other hand, by revealing static biliary conditions, warn us in time to prevent gallbladder pathology with all its sequelæ; when also it is considered that the very process, *per se,* sets static bile in motion and is thus a curative, its place in medical practice must become an accepted fact.

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The author's references will appear in his reprints.

A Recommended Procedure for the Relief of Ala Deformity in Certain Cases in the Adult Associated with Hare Lip and Its Mechanical Counterpart*

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This procedure is recommended for your consideration and is intended for relief of deformity of the ala nares in certain cases in the adult in which there is present a hare lip. It applies to those cases having an abnormally broad nostril, with marked flattening of the ala where relief could not be wholly accomplished and a pleasing result obtained by performing one or other of the many plastic procedures recommended for this condition. The reason for this is obvious.

This deformity is caused by severe adhesions in the maxillary—ala area, which strongly bind that part of the nasal organ to the superior maxillary bone. It is similar, although not as severe as is the case in the syphilitic nose. (Drawing of the maxillary—ala area showing extent of adhesions to be freed.)

No amount of undercutting will permanently relieve this condition. The fault lies with the lack of recognition that the lining is as essential as the covering. In this deformity there is replacement of mucous membrane and musculature with scar tissue, which is firmly adherent to the underlying bone. To

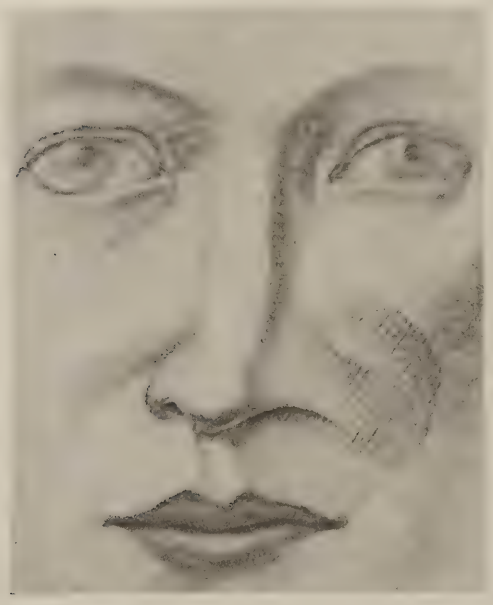

FIG. 1.—Extent of undermining alar area.

overcome this deformity it will be necessary to replace the scar tissue and disintegrated membrane by a membranous structure of a similar or corresponding function. It is obvious that mucous membrane cannot be obtained from any other part in amount sufficient to replenish that which has been removed. Consequently, we resort to the skin, the only other structure with an epithelium content, and we call this process or operation epithelization.

*Presented before the Throat Section, New York Academy of Medicine, Wednesday, March 26, 1924.

METHOD OF APPLYING EPITHELIUM

The patient is first referred to a dental surgeon who will make a small, removable cup splint to fit into the upper teeth. If the mouth be edentulous, a special plate is made to which is attached the stanchion of the nasal appliance. To the centre of the splint there is attached an upright semiflexible piece of metal with three triangular wings. The length of the splint will approximate that of the raw area.

FIG. 2.—Dental appliance which carries skin covered mould to raw area.

The drawing illustrates an actual splint made by my brother, Dr. A. Beaman Sheehan. A cupshaped splint without the upright stanchion, is fastened to the upper teeth, and an incision is made one quarter of an inch above the gingival line, extending from the nasal line backwards for some two inches. The incision is then extended upwards and laterally, separating the adhesions from the bone, which leaves a bony raw area below and scar above. It is this latter scar area which must be excised with meticulous care. This elevates the ala and lessens the deformity. To insure its permanency the raw areas are skin grafted.

A mould of Stent is sterilized by boiling. A model of the raw area is made by inserting the sterile Stent, made soft and pliable by immersion in hot water, in the alamaxillary cavity through the gum incision. The Stent is pressed upward, then laterally and then posteriorly until all the exposed raw areas are completely covered and an excess left to allow for subsequent contractions. The upright stanchion of the prosthesis appliance, heated in a spirit flame, is then inserted upwards into the mould and screwed to the dental splint. The mould, while warm, must be manipulated to insure that the proper shape of the mould area has been formed and that all the exposed raw areas are covered.

Sterile ice water is sprayed through the nostrils, causing the mould to set, and it is then removed with the stanchion unscrewed from the splint. Markings

on the mould will show where the Stent has actually come into contact with the raw areas. It is the raw area thus identified, which must be covered.

The graft should, if possible, be cut in one large piece and thin, in order that the whole mould may be covered and application to the area to be skin grafted facilitated. It is cut, preferably, from the right, inner aspect of the thigh in a nonhairy area. The graft is spread completely over the mould, raw side uppermost, care being taken to avoid wrinkles and slack.

The mould, covered with skin and attached to the upright appliance, is inserted and secured to the nose or splint attached to the teeth. It should remain *in situ* for ten days, after which it should be removed and cleansed. Inspection of the area now shows the formerly raw areas covered with an epithelial lining. A mould of gutta percha is then made, patterned after the original one of Stent, and inserted into the newly lined area to take the place of that removed. It is removed daily for cleansing purposes. Its use is continued for two months, when it is removed for good and the patient is now ready for the small plastic operation on the ala, which, in the majority of cases, gives a perfect result.

This result could not be achieved if the epithelization of the under parts had not been done, as it not only causes the ala to stay erected, but it also prevents further contractures of the ala to the maxillary bone.

Hydatid Brain Cyst

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That we cannot be absolutely sure of the location of a brain tumor, even when all signs point to a certain area, is an axiom in medicine. To this should be added, that we cannot be sure of the type of tumor even though all signs point to a certain type, for example, gumma, as was diagnosed in the following case. I am sure that more tumors form in the brain than is generally thought by those who hold but an occasional autopsy. The value of an autopsy is clearly demonstrated in my case, for had we not done one the clinical diagnosis of syphilitic lesion (gumma) at the base of the brain would have held as the cause of death.

Case I.—The patient, a man aged twenty-eight, had a chancre of the penis in 1918, for which he received "only a part of the prescribed Army treatment." On September 25, 1922, he consulted a physician with regard to occipital headaches of one week duration and intermittent in character. On October 2, 1922, physical findings were negative except a double plus Wassermann reaction. Antiluetic treatment was administered for the two weeks following, during which time there were no headaches, then an attack requiring morphine to control.

On October 16th, Dr. Charles Webster reported, "optic neuritis, bilateral." My consulting neurologist, Dr. Watson-Smith, found, "undoubtedly a case of brain tumor, unable to localize or to determine the character of it." Antiluetic treatment was pushed harder the next five days and there was no headache. On the 22nd the patient had a severe attack of headache and vomited for the first time. During the next seven days he was free from headache, but complained of "inability to awaken in the morning," and had trouble in "beginning the act of urination." He staggered slightly to the left.

On October 30th he had another attack which was followed by an interim of ten days' apparent improvement. He was feeling so well that he wanted to leave the hospital, and I permitted him to go. The next morning he was readmitted in a state of collapse, head drawn back, right pupil fully dilated, left pupil dilated with vertical diameter greater than transverse, breathing difficult, and masseter muscles in spasm. This picture remained the same until death at 11:30 a. m., by respiratory arrest. The autopsy findings an hour later by Dr. Douglas Cruickshank were negative throughout except for the intracranial findings, which were as follows:

Brain of normal shape; moderate congestion of meningeal vessels everywhere; a few scattered adhesions between pia and dura; hardened in ten per cent. formalin.

When the brain hardened it was noted that the right quadrate lobule where it presented in the median fissure was apparently very thin and fluctuant. A fine needle was made to penetrate this fluctuating mass from a distance and ten c. c. of clear colorless fluid was withdrawn. This was centrifuged but showed no deposit under the microscope.

A horizontal section was then made across the right cerebrum 1.5 cm. below the vertex. This opened into a smooth, sharply defined, spherical cavity six cm. in diameter. This cavity contained the clear, transparent membrane of a single hydatid cyst that had retracted because of the removal of part of its fluid and thereby remained intact. On inverting the brain the cyst rolled out of the cavity, demonstrating that it was nowhere attached to the brain substance and that the latter had not been injured except by pressure and displacement. At no place was the cortex of the brain encroached upon except in the quadrate lobule, where it was very thin.

The cavity lay within the following bounds: Anteriorly, Rolandic fissure; posteriorly, parietooccipital fissure; superiorly, superior parietal fissure; inferiorly, posterior limb of fissure of Sylvius; laterally, angular gyrus; mesially, quadrate lobe. The brain appeared large, measured eighteen cm. long by 15.5 cm. broad by ten cm. deep. It was preserved for pathological purposes and no further section was made.

Anatomical diagnosis was hydatid cyst within the medulla of the brain, encroaching upon the cortex only in the right quadrate lobule. Death was due to intracranial pressure.

Practical Therapeutics

THE VALUE OF BACTERINS IN PRACTICE

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That bacterins (killed germs in salt solution) are of value as therapeutic and prophylactic agents, there is now no question. To be sure they do not in every instance of infection stay the disease and cure the sufferer. Such an ideal agent does not exist and no thoughtful physician would expect as much. Those who question the value of bacterins have had no extensive clinical experience with them, have inefficiently used them, or have not used them at all. It is interesting to note that those who questioned their value on theoretical grounds are fading out in the face of large clinical experience. Notably those who dogmatically stated that if there was any therapeutic value in bacterins they must be autogenic preparations in order to have the specific antigens.

The therapeutic results with stock bacterins and nonspecific proteins have now been so extensively proved and for such a long period that these contenders must cease to contend. It is true that some times the autogenic bacterins must be used, especially if well selected stock bacterins seem to fail.

The fundamental principle of bacterin therapy is stimulation of the natural immunizing forces of the body to produce antibodies in the healthy tissues, away from the site of infection, for the purpose of getting rid of the offending invaders (germs) and neutralizing their toxins. That this does occur has been proven by Sir Almroth E. Wright and others in extensive research work, and by the clinical results obtained by many thousands of physicians throughout the world.

In 1918 few physicians were using mixed bacterial vaccines in pneumonia. Many good men were strongly antagonistic to their use in this highly fatal disease solely on theoretical grounds. Today, mixed formulas of pneumococcus, streptococcus, micrococcus catarrhalis, Friedlander bacillus, and similar organisms are not only extensively used in the treatment of pneumonia but are fast approaching the standing of diphtheria antitoxin in what has been a highly fatal disease.

The failure to get successful results from the use of bacterins in the treatment of infectious processes, where they would be indicated, is due to a number of factors, some of them known, some probably not known at this time. We must remember that in dealing with immunizing forces there are complex phases that interfere with favorable results in some individuals, yet the proportion of good results unquestionably justifies their use in all conditions due to germ invasion and activity.

That the use of bacterins is a harmless procedure is now apparently beyond question, for their use during the past fifteen or more years and their extensive use in the past five years, have brought out no statistics to the contrary.

Bacterial vaccines must not be confused with serums or toxin filtrates that have been brought out from time to time, and occasionally cause an anaphylaxis. Anaphylaxis, however, is due to an idiosyncrasy of the patient to the serum or toxin filtrate. I have never seen or heard of an anaphylaxis following the use of bacterins. Occasionally a severe reaction will occur but today many users of bacterins consider a good reaction essential to the best results, notably in treating gonorrhea. Stimulation of the natural fighting forces in the human economy against bacterial invasion and destruction is essential.

In the light of the knowledge we now have on the subject, procedure toward activating the immunizing forces is as sensible as activating other functions and organs of the body. The time is near when failure to do this will be looked upon as an inexcusable neglect which will place the guilty physician in a position for severe criticism. The time for saying, "Let your patients alone, they will get well if you give Nature a chance by letting her alone," is over. The physician is consulted by the patient with the expectation, and justly so, that the man learned in anatomy, physics, physiology, pathology, bacteriology, therapeutics, etc., can aid Nature in overcoming the condition which the physician is asked to treat.

The physician's moral duty is to do his best and in order to do so he must keep abreast of the times and study carefully and intelligently those agencies that are brought forth from time to time that will improve his technic and obtain better results. It has been said, and no doubt it is a fact, that seventy-five per cent. of our patients would recover without the services of a physician. If this is true, our real problem is with the remaining twenty-five per cent. Let us then strive to improve materially or relieve the sufferings, and reduce the mortality of this twenty-five per cent. This is the real test of a physician's ability.

I do not believe that my contention will be denied that the majority of our real problems in medicine are due to infections. Then, the subjects of bacteriology and immunology stand out as foremost factors in our work and should receive the most earnest consideration and study on the part of the practitioner and surgeon.

The best technic in surgery counts for naught if the patient dies, so the real test of a surgeon's good work is, not so much good surgery, but satisfactory recoveries. Might it not be possible that the practice of preoperative and postoperative immunization against the well known pathogenic organisms in surgery, would reduce materially the socalled complications, that frequently either kill the patients or leave them invalids to be held up as warnings against surgery?

Several months ago my wife had appendicitis. Immediately upon the manifestation of symptoms of the disease, I gave her one half cubic centimetre of a stock bacterin. Eight hours later, just before going to the hospital, she received a full c.c. of the same bacterin. This procedure was simply to

aid Nature's fighting forces to care for the post-operative conditions. On incision the surgeon found adhesions and a bad streptococcus infection (no pus) of the appendix. It was removed and the incision closed. The condition warranted the grave attitude of the surgeon at the conclusion of the operation. To the surgeon's surprise the patient's recovery was ideal; she left the hospital in twelve days. She probably would have recovered without the use of the bacterins, but unquestionably they did no harm. The unusually good results following a careful surgical operation in this case justify the belief that the bacterins rendered valuable service.

A few weeks later a friend, with a much less serious infection, underwent a similar operation by a first class surgeon. After seven weeks of severe suffering from postpoperative infection her condition was still serious. No bacterins were used in this case.

The circumstances and results in these two cases give food for serious thought.

THE COMPARATIVELY NEW NONSPECIFIC PROTEIN

The use of a comparatively new antigen, sterilized milk, usually mentioned as milk or lactic antigen, is filtering into our armentarium of immunizing agents very rapidly. Much has been accomplished in Europe and in this country with this new stimulant to the immunizing forces, and it behooves every physician and surgeon to give it careful consideration and extensive use with critical observation to obtain its true value in medicine. It is, of course, a nonspecific protein stimulant to antibody production.

The possibility of nonspecific protein therapy was long ago recognized and established by Sir A. E. Wright and other authorities in the field of immunology. The extent of its value, however, must be proved by extensive clinical evidence. In preparing this milk antigen great care must be used in the selection of the milk which must be free from pathogenic organisms, especially tubercle bacillus. Even milk from certified dairies must be carefully sterilized. It is best prepared in laboratories equipped for the purpose.

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TREATMENT OF ACUTE AND CHRONIC POLYARTHRITIS, ARTHRITIS DEFORMANS, AND SEPTICEMIAS, WITH ACTIVATED COLLOIDAL SULPHUR

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(*Concluded from page* 26)

HISTORY OF TREATED CASES

Case I.—E. V., aged fifty. Admitted to hospital September 28, 1923. Severe arthritis deformans of two years' standing involving all joints, hard, cracking by movement, tophi, raising approximately one inch above joints. Practically complete immobility on admission, complaining of continuous severe pains. Wassermann negative. Focus of infection not evident.

Intravenous injections of 338 B. alternating later with 338 D, started September 29th, initial dose three c. c.; thereafter four c. c. of 338 B alternating with 338 D three times a week. October 22nd, noticeable improvement. Patient not complaining much about pains; sleeping better; better appetite. About November 15th, the patient commenced to use his hands to feed himself; could bend his knees and lift himself in bed. January, 1924, the patient was able to get out of bed with help. At present can sit in chair and stand up without pain. This case typifies most severe arthritis deformans with extensive involvement of all joints. Further, progressive improvement was noted and patient is being kept for further treatment.

Case II.—H. J., aged forty. Admitted to hospital February 13, 1924. Arthritis deformans involving knee, hip and spine joints. Ten years ago suppurative inflammation of knee joints, operated upon in the hospital; later hip joints became involved and seven years ago spinal involvement developed. Two years later was operated on his hip joints without result. General painfulness on admission. Immobility of ankles, knees, hip and spine. Walking on crutches only.

After five injections, intravenous, of 338 B alternating with 338 D, the patient could stand more easily on crutches, he had less pain and rapidly increasing mobility was noticeable. After fifteen injections patient could walk slowly without crutches, pain gone. Patient still under treatment.

Case III.—A. H., aged twenty-two. Admitted to hospital May 31, 1923. Subacute polyarthritis involving all joints. Ankle joints, spine and shoulder joints swollen and painful. Evidence of chronic tonsillitis with probability of tonsils being focus of infection.

Intravenous injections of 338 B alternating with 338 D. Clinical conditions disappeared rapidly after treatment comprising of about twelve intravenal injections. Two months after this treatment peritonsillar abscess with return of all previous clinical conditions occurred. After lancing abscess, conditions remained the same for six weeks. Patient was put back on intravenous administration of 338. After fifteen injections, patient discharged, returned home in perfectly normal and healthy condition.

Case IV.—G. E., aged forty-four. Admitted to hospital June 7, 1923. Chronic polyarthritis and pyelonephritis and Staphylococcus aureus bacteremia; ankle joints, shoulder and finger joints involved, swollen and painful. Patient walked with difficulty on crutches; trouble started two months prior to admission. Repeated blood cultures showed Staphylococcus aureus. Urine pus cells, Staphylococcus aureus, granular and hyaline casts and one and a half per cent. albumin.

Intravenous injections of 338 B, later 338 D, started June 11th. Two weeks later patient felt much better; only slight swelling of ankle joints remaining. Two months after admission to hospital, after a total of twenty-five injections, the patient was discharged in a perfectly healthy condition, and went to work. The blood culture became negative after two injections.

Case V.—N. M., aged thirty-eight. Admitted to

hospital May 9, 1923. Acute polyarthritis, acute endocarditis, tonsillitis, nephritis, past six months patient had occasional pains and swellings of various joints; two weeks prior to admission, sudden acute attack of polyarthritis with febrile manifestations. Ankle joints became swollen, immobile and the trouble spread progressively to knees, hips, shoulder and wrists. Upon admission, the patient had dyspnea. Patient complained of continuous pain day and night.

Intravenous injections of 338 B commenced May 12th. One injection given every day. There was immediate improvement. After first injection, swelling and pain commenced to recede rapidly. Patient rested and slept well. After three injections, patient sat up. On June 3rd the swelling was gone, patient walked around ward with only slight pain. Four weeks later patient appeared to be normal; heart, kidney and joint conditions having cleared out completely.

When this treatment is used the pain, swelling and inflammatory conditions recede rapidly. Bacteremias and septicemias were cleared after four to six injections, blood cultures becoming negative after one or two injections. 338 was continued, however, to prevent reinfection assuming that the focus of the infection (walled in) has not been eliminated. Chronic cases where important tissue changes had taken place showed slow but continued improvement in mobility. In all cases there is noticeable a positive stimulating effect of the preparation.

ACTION OF THE DRUG

The sulphur element of the injected preparation combines immediately with hydrogen present in the body hydrates and sets free an ionized active form of oxygen (in *status nascendi*) to react with body constituents. This occurs according to the formula $S+H_2O=H_2S+O_{(3)}$. This oxygenation process starts during or immediately after the injection and goes on simultaneously with the excretion of metamorphosed sulphur in the form of H_2S through the respiratory channels. This oxygenation and elimination process is very rapid and may end—as in the case of 338 B—within ten minutes after the injection. During the injection or immediately after, there is a noticeable odor of exhaled H_2S. It can always be detected by holding before the nostrils of the patient a moist strip of paper impregnated with solution of lead acetate. It is to be noted that electric negative charges of injected colloidal particles cause their fixation with pathogenic organism in blood which carries positive charge. This phenomenon is well known in colloidal chemistry and it is similar in effect to the action of body precipitins; spontaneous oxidation processes following this, produce positive detoxication and sterilization of the body fluids. This method of action of 338 differs from known preparations in this, that the element by itself is not toxic in the sense of arsenical, mercurial and bismuth preparations and its germicidal effects are primarily not due to the element itself but due to the oxygenation processes that it sets up in the body.

Germicidal intensity of this modus operandi is evident in this that often a single dose of seventy-five milligrams of sulphur element, approximately one tenth of a dose of well known arsenical preparations, is capable of sterilizing the blood and controlling most severe types of bacteremias with culture becoming negative within twenty minutes after the injection. The experience of the writers in this respect is substantiated by the results of the unpublished work by the late George Stuart Willis of the Post-Graduate Hospital, New York City, and William Faison. Those oxidizing properties of the preparation apart from its germicidal effect have further important value in body metabolism. This is evident in metabolic studies on blood and urine. Metabolic oxidization coefficient of blood, osmotic pressure and alkalinity are raised rapidly. Furthermore, intravenous administration of 338 influences the nitrogen metabolism profoundly. It is also interesting to note that after a few injections, acid uric in blood drops down fifty per cent. or lower; the reason for this the writers are not as yet prepared to offer. After every injection there is a marked transient leucocytosis and a steady rise in erythrocytes and hemoglobin. Studies of the influence of 338 on nitrogen metabolism will be published later.

The fact that 338 activated colloidal sulphur is an apparently positive and effective germicidal and detoxicant *in vivo* with particular affinity for pyogenic organism and that it is an oxidizer having important beneficial influences on body metabolism, that it is noncumulative and safe in administration and of great importance in general practice should not encourage the users of the drug to become unduly optimistic or careless in its administration. Its effect in each case must be watched critically and with proper application of the blood and body chemistry. Only in this way can the ultimate values of 338 and its wide adaptability in therapy and probable effects be learned and the field for its application solidly established.

The author's references will appear in his reprints.

The Similarity of Action of Parenteral Sulphur Therapy and Proteotherapy.—As a result of experimental investigations and clinical experiences, Edmund Maliwa (*Wiener Archiv für Innere Medizin,* December 1, 1923) comes to the conclusion that proteotherapy is only a part of stimulation therapy. It is not the parenterally introduced protein or its decomposition products that produces the stimulation, but rather that there is a cellular reaction in the form of a (local) stimulation of tissue. This may also result from an intravenous administration. The effects of the irritation are certainly not merely an agitation of colloids, but they bear the signs of a functional chemical influence, which is demonstrable not only by the variations in the construction of the protein of the serum, but also by the change in the hydrogen and chlorid metabolism as sensitive indicators. Proteins and inorganic stimulating bodies show not qualitative but quantitative differences in their effect; at any rate the quantitative differences can produce qualitatively different secondary reactions according to physiological and pathophysiological laws (Arndt-Schulz). From the therapeutic viewpoint, treatment with sulphur is recommended for chronic joint processes only when other proteotherapy has failed.

Historical Medicine

The History of Bathing

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SULPHUR BATHS

The use of sulphur baths can be traced back to a very remote period. Thus we read in Grecian mythology that Hercules on his way through Thermopylæ encountered the Goddess Athena, who bade him lave his weary limbs in the refreshing waters of the sulphur springs that rose in that historic pass. Indeed, it has been suggested that the prophet Elijah, when urging Naaman, King of Syria, to dip himself in the waters of Jordan, was, apart from his belief in the sanctity of the holy stream, probably aware of the curative powers of a sulphur spring situated in the valley through which it coursed on its way to the Dead Sea. This speculative inference is to some extent supported by the fact that the waters of this inland sea hold bitumen, a substance, as we know, containing sulphur.

Commander Lynch also, in the course of his exploration of the Dead Sea and the watershed of the Jordan, ascertained that the hot springs of Callirhoe, which pour themselves eventually into the former, were a little sulphurous in nature. Again, the writings of Aristotle and Athenaeus attest that the fame of the sulphur springs of Eubaea in the fourth century before Christ attracted so many from all parts, that the King Antigonos imposed a polltax on those who availed themselves of their healing virtues.

Indeed, according to Plutarch, Ædepsus, the site of the most celebrated springs in Eubaea, would appear even at this remote period to have attained to the dignity of a spa, the ancient Greeks resorting thither in the springtime.

This same historian tells us that Sulla after a visit to this ancient health resort completely rid himself of the gout. The old Greek physician Ætius also in his works remarks that "the bathes of brimstone soften the sinews; they scoure and cleanse the skinne, wherefore they are good for the white morphew and for the blacke, for the leprosy."

Nor were the Greeks singular in their appreciation of the therapeutic virtues of sulphur, for Pliny's *Natural History* abounds with allusions, testifying to its good repute among the Romans. Thus, he informs us that the waters of Baiae, so beloved of Nero, contained sulphur, and adds that the cold sulphur springs of Albula promoted the healing of wounds. Although frigid, the sulphurous vapour arising from these waters was apparently so strong as to give the appearance of smoking, as is clear from a reference culled from one of Martial's epigrams, *"Canaque sulphureis Albula fumat aquis."*

Again, the cold sulphur springs of Cutilia in the Sabine territory are spoken of both by Pliny and Celsus as being suitable for disorders of the stomach. It is interesting to note, moreover, that one of these is still encircled by marble steps, and some remains of baths are still visible despite the fretting touch of time. Celsus, it appears, thought highly of the value of sulphur in nervous disorders, and Horace in one of his epistles reechoes the same belief. Agricola also, in his quaint reflections on "the things that flow out of the earth," observes "That bathes of brimstone do soften the sinews and doe heate, they are good therefore for palsie for places pulled in too much or stretched too farre forth."

Enough has been said to show the antiquity of our belief in the therapeutic value of sulphur, and the fact that we in our day enlist its aid for much the same class of ailments, as did the physicians of this bygone age, speaks well for the sagacity of these whilom followers of the healing art.

VAPOR BATHS

The special advantages of this type were fully recognized even by aborginal mankind, the North American Indians, to wit, having from time immemorial availed themselves of its refreshing and restorative effects. Thus Gent, in his *History of Virginia,* tells us that the Indians had even in the remote past devised primitive "sweating chambers" for this purpose, locating them as a rule near the banks of a river.

Upon the floor of these nearly airtight huts, a stove covered by a layer of stones, was placed, while upon these latter, when sufficiently heated, cold water was poured at intervals, thus securing the desired mixture of hot air and steam. Subsequently, the freely perspiring savage plunged into the cold waters of the neighboring stream in order to secure the necessary reaction. Similar crude contrivances were also in vogue among the ancient Mexicans, Celts and Finns and had, moreover, for many centuries been in high favor with the Chinese and Japanese peoples.

More particular information is to hand regarding the "sweating houses" or "Tig Allui" of the early Celts of Ireland, which, according to Urquhart and Haughton, were capable of accommodating six or eight persons at one time, the latter authority, however, stating that smaller varieties admitting of only one occupant were also in use.

As might be expected of so cultured a people, the Greeks were quite conversant with the vapor bath, which, indeed, they brought to a high pitch of perfection; Herodotus, when animadverting on the Scythians habit of burning hemp, observes that the smoke produced was "such as no Grecian vapor bath ever exceeded." Subsequently the Greeks designed their well known hypocaust of which, indeed all, our modern vapor baths are but replicas with accessories designed to meet the need of more luxurious days. Briefly described, the hypocaust consisted of a furnace situated beneath the "sweating chamber" whose walls were surrounded with flues connected there-

with. Public baths of this nature flourished greatly among the Greeks and were eventually imitated at Rome.

Here we must refer to a highly interesting passage in the writings of Celsus which runs as follows:

"Sudor etiam duobus modis elicitur aut sicco calore aut balnec"

"Siccus calor est et arenae calidae et laconici et clibani e et Quarundam naturalium sudationum ubi e terra profusis calidus vapor. Aedific includitur sicut super Baiae in myrtetis habemus."

The foregoing statement by this old physician seems to indicate that, at first, these baths existed only in the immediate neighborhood of natural thermal springs, the hot vapors arising from which were confined within a superimposed chamber. From the same quotation we glean the further information that dry heat produced through the agency of hot sand or the laconicum, was also utilized to promote perspiration, an anticipation evidently of our modern hot air baths.

According to Vitruvius, and as we see from the quotation from Celsus given above, such superstructures existed at the famed spa Baiae, while the latter adds that certain caverns in the Cumaean Mountains were also in request for the same purpose, the inclosed recesses of which were permeated with the vapors of thermal springs piercing the subjacent earth. Indeed, examples of such natural hot vapor chambers are still to be seen in the environs of Pozzuoli, i. e., the Bagni di Nerone, and also at Monsummano in the province of Lucca. The ruins of similar structures have been unearthed in the East, also in our own country at Bath.

To continue, the Romans in accordance with their usual custom, erected these "sweating houses" in all the countries that came under their sway, hence the widespread distribution of these remains of a bygone civilization. How it came about, that these Roman bathing establishments, despite their obvious therapeutic value, were allowed to lapse into disuse and decay is difficult to understand, but the fact remains, that with the decline of the Empire their use became obsolete, remaining so for many centuries to follow. The popularity of the vapor bath in Europe during the Middle Ages was in some measure due to the Crusaders, who introduced it from Palestine, and Baas in his *History of Medicine* remarks on the socalled sweating houses attached to almost every city of note throughout the Continent. In our sketch of the development of the system of vapor baths, we have seen that probably in the first instance the ancients contented themselves with utilizing natural sources of heat.

Obviously, however, this method had the great disadvantage that nothing in the shape of vapor bath could be enjoyed save in the immediate vicinity of a natural thermal spring. In order, therefore, to render their enjoyment of such baths independent of locality, they had to resort to artificial modes of obtaining the heat requisite for rude sweating chambers. The difficulty of maintaining a more or less constant temperature still confronted them, a disability they were destined to labor under up to the time of the introduction by the Greeks of their so-called hypocaust.

In conclusion, as may be gathered from the foregoing historical résumé, this particular bath would appear to represent the earliest effort of mankind to attain to a more specialized form of hydrotherapy.

As we have seen, alike by savage tribes and highly civilized nations, was its high therapeutic value recognized and though for some unrevealed reason, the old Roman vapor baths fell for centuries into ill merited desuetude, yet it never lost its hold upon Eastern nations, among whom it persisted as a Mahommedan survival of the old Roman baths.

Kidney Physiology and Anatomy According to Hippocrates and Aristotle

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(*Concluded from page* 30)

This matter has been more or less developed in the literature of the history of medicine, but there is a matter which has engaged my attention since I have rummaged through ethnological literature in search of the medicine of primitive man which has a connotation with the early history of the function of the kidneys and this is one which has received so far as I know no attention from medical historians. This is the superstition prevailing among the primitive Australians, and elsewhere at least to some extent among primitive men in Africa in regard to the kidney fat. This among the natives of Australia (5), who must now be spoken of in the past tense, was the much coveted object desired by all those wanting to work magic. On the other hand it was treasured by each man as the most essential part of his anatomy, the loss of which at the hand of another, however slight the wound in extracting it, was a certain and unavoidable harbinger of death. However robust he simply gave up all hope or desire for life and died. When in the bush he was constantly on the alert lest some enemy lurking in secrecy, or the companion walking at his side, finding an opportunity too tempting, should crack him over the head and before he recovered his senses, with a sharp flint knife would make an incision and extract from him the very fountain of life. It is conceivable of course that in this lightning like assault and savage surgery the suprarenals were frequently enough injured or torn out to give rise to the absolutely assured presentment of death in the victim. The assailant often had no personal grievance

against the man. He was only a primitive experimentalist engaged in research with magic as his dominant theory and with his specimen he retired to the depths of the forest and worked for the salvation of his patients or perhaps more often for the destruction of his foes. I am sure no candid researcher now, after the recent unpleasantness among civilized and cultured men, can criticize our savage progenitor for doing his part in the preparation of munitions for his tribe intending to exterminate some other tribe.

Here, however, our interest is to lead up to what Aristotle has to say about the kidney fat. "Of all the viscera the kidneys are those that have the most fat. . . . The fat is not formed in the kidneys themselves, the density of their substance forbidding this, but is deposited about their external surface." It acts as a cushion allowing of the flexibility of the loin and yet protecting very important organs from injury, other vital organs of the various cavities being protected by bony walls or musculature. It also maintains the animal heat. The kidneys "are organs through which the residual matters percolate, . . . moreover by being fat they are the better able to secrete and concoct their fluid" (6a). It will be seen that while Aristotle attributes special functions to the fat around the kidneys, he has missed the magic his primitive predecessors and his modern descendants and disciples have found in it, when it contains the suprarenals at least, but it lends emphasis to his appreciation of the importance of the fat to see he regards that in which the kidney is embedded as distilled from it.

In drawing upon modern ethnology for examples of prehistoric primitive man we are inadvertently betrayed into the error of assuming that as primitive man is now so he was when sprang away from him those marvelous ancient civilizations whose thoughts, if only out of mere curiosity, we are so eager to share. It may be "in vain we hope to be known by open and visible conservatories when the unknown was the means of the preservation of the relics of the past and obscurity their protection," but at the dawn of recorded consecutive thought it is quite impossible to enter into its ancient current without speculating, without forming at least some tentative opinion whence it flowed, and the quotation I have elsewhere (8) made from a spurious book of Galen in regard to the magic of his day is a hint we may not be far wrong. We perhaps have gained little from our comparatively modern knowledge of the Australian bushman as to the ideas of the kidney fat and we can perhaps not hope to fathom the reasons why Aristotle thought of the bladder as being the chief organ for secreting the urine from the blood. It seems, however, we do get in line with some ancient primitive theory when we find Aristotle saying, the spleen drawing water from the stomach and the kidneys being absent in birds and most reptiles and the flesh itself separating water from the food, "the kidneys, when they are present, exist not of actual necessity, but as a matter of greater finish and protection" (6b), they are of assistance to the bladder, both existing for the same purpose. Only those animals whose lungs contain blood have a bladder. The same is true of the kidneys (6c). We need not stop to point out the mistakes of Aristotle on this subject, but we see how the mistaken theory of the function of the urinary organs arose out of his extensive and direct observations upon animals, in part, but apparently in part only.

What we have found in the Hippocratic Corpus both as confirmation and refutation of the theory so clearly enunciated by Plato and what we have gathered from Plutarch point to the existence, as late at least as the reputed epoch of Hippocrates, of a body of belief that the fluids, taken in by the mouth and passing through the lungs and the flesh elsewhere as filters, passed by different channels than the kidneys to the bladder. Notwithstanding this aberration and its origin in preexisting thought we find Aristotle observing (6c) that "the duct which runs to the kidney from the great vessel does not terminate in the central cavity but is expended in the substance of the organ, so that there is no blood in the cavity nor is any coagulum found after death. A pair of stout ducts void of blood run from the cavity of each kidney to the bladder." Whether he is referring to the renal vein coming off from the vena cavity as the duct going to the kidney is not very clear, but in all probability that is his thought, for he believed the arteries in general to be free from blood. So apparently did the author of the Hippocratic book on *Anatomy* (2a) who uses the word bronchus. The latter dwelt in an obfuscation which concealed from him any functional difference between a bronchus and a large artery. Before Aristotle the word aorta had not the specific application in anatomy which he first gave to it. There is therefore no difficulty in perceiving the conception existing of water poured into the lungs going more or less directly without the intervention of kidney or bloodvessel to the bladder.

From this more or less naive conception arose later mistaken conceptions of function and its disturbance even in Galen, who knew vastly more anatomy of man though he gained it from apes, than Aristotle did. But Galen gets from Aristotle and Aristotle had it from his extensive dissection of animals that in man the right instead of the left kidney is higher in the abdominal cavity than the left. He knew, too, as we see in his *History of Animals* (7) that "both the aorta and the great vein continue as far as the kidney each as a single duct," that there are "branches near the kidney both from the great vein and the aorta," but what experience led him to the succeeding statement it is difficult to say: "two other strong and continuous passages reach from the aorta to the bladder and others from the cavity of the kidney, but these do not communicate with the great vein." These continuous passages from the aorta to the bladder must have been arteries and if arteries carry nothing but air it is difficult to see how the bladder is going to distil urine from the blood by virtue of their existence. Evidently then Aristotle had some other use for them or there is some mutilation of the original text. I have used Creswell's translation. It agrees with that of St. Hilaire. The text of Scaliger edited by Schneider justifies it. If the bladder is a secreting organ in the physiology of Aristotle it has nothing to secrete from. What the two large continuous arteries were one better skilled in comparative anatomy must say, and Dr. Singer has made a study of the anatomy of Aristotle. As

this is a side issue to our interest in the kidneys, I may be permitted to leave the matter there, but before doing so it is well to remark that Aristotle rejected (6d) the idea of fluid passing normally into the lungs, possibly also having the erroneous statement of Plato in mind.

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Contributors to the Science of Medicine

EDWARD JENNER

Edward Jenner was born on May 17, 1749, at Berkeley, Gloucestershire. His father, who died when Jenner was a small child, was the vicar of Berkeley, and his mother a member of one of the oldest and most prominent families of Berkshire. Edward's education was supervised by his older brother, the Reverend Stephen Jenner; his favorite studies were the classics and natural history, his bent toward the latter having shown itself at a very early age. At the age of nine he had already made a sizeable collection of dormouse nests, and was spending most of his time hunting for fossils in the neighborhood of his home.

When he was quite young his profession, according to the English custom, was decided upon and medicine chosen. To begin the acquirement of knowledge of this subject, he was apprenticed to a physician, and, after completing his term of service, went to London to continue his studies, where he lived for two years in the family of John Hunter, whose favorite pupil he became. This friendship lasted throughout the lives of the two great physiologists, for they had many interests and traits of character in common.

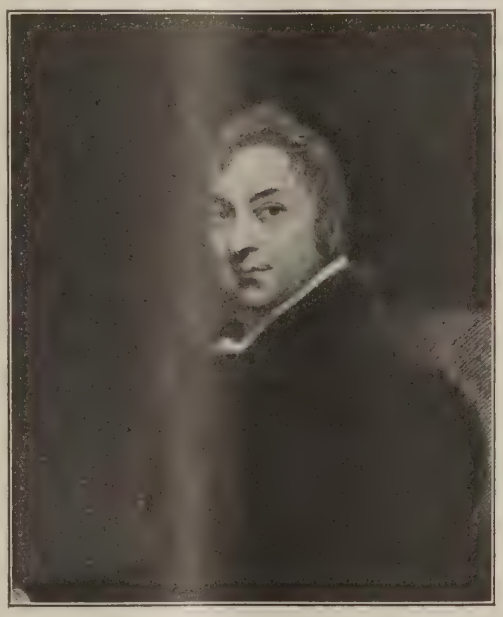
Because of Jenner's almost unparalleled skill in dissecting and mounting anatomical and natural history specimens, Hunter recommended him to Sir Joseph Banks to prepare and arrange the large number of specimens brought home by Captain Cook from his famous voyage of discovery in 1771. The next year he was invited to become the official naturalist of the succeeding expedition, but declined, preferring for his work the seclusion of a country village. It is to this decision that we probably owe one of the greatest benefits the medical profession has ever given to mankind—the demonstration of the prophylactic powers of cowpox and vaccination. This subject became Jenner's hobby; it is said that he imposed it upon the medical club of which he was a member to such a harassing degree that he was threatened with expulsion because he insisted upon dinning into their ears a theory which they conceived to be without any foundation but popular rumor. Jenner therefore had to carry on his investigations alone and without any sympathy from most of his colleagues. He succeeded in perfecting his inquiry amidst the many and anxious duties of the country practitioner, although he was more than fifty years of age before he published in full the report of his experiments and investigations.

While he was still an apprentice, a young country woman applied to his master for advice. Smallpox was suggested, to which she replied that she could not take that disease since she had had cowpox. Jenner never forgot her remark, and the incident, insignificant as it was, led to his future work with vaccination. His concealment of his results did not rise from selfish motives, but, first, from the lack of sympathy which he met with from members of his own profession; and second, a fear of disappointment or failure, if the matter should be brought out too early to carry immediate conviction with its publication. One of his early discoveries was that swinepox as well as cowpox is a variety of smallpox. This he found out through inoculating his oldest son with swinepox virus. He discovered also that cowpox does not always give immunity against smallpox, which led to a series of experiments that finally demonstrated that it is only in a certain state of the vesicle that the virus possesses protective power. His first successful vaccination was performed on May 14, 1796, when he injected lymph from the arm of a woman infected with cowpox into the arms of a healthy boy of eight. The boy had cowpox, and on July 1st was inoculated with smallpox, with no effects.

Jenner expressed his joy and satisfaction with the results of his labors as follows: "While the vaccine discovery was progressive, the joy I felt at the prospect before me of being the instrument destined to take away from the world one of its greatest calamities, blended with the fond hope of enjoying independence, and domestic peace and happiness, was often so excessive that, in pursuing my favorite subject among the meadows, I have sometimes found myself in a kind of reverie. It is pleasant to me to recollect that these reflections always ended in devout acknowledgments to that Being from whom this and all other mercies flow."

In 1798 Jenner went to London for the purpose of demonstrating his discoveries to his professional friends, but his proposition was received with so great apathy and distrust that he was forced to return to his country home without having made a

single inoculation. The virus brought to London with him, however, he consigned to the celebrated surgeon of St. Thomas's Hospital, Dr. Cline, who finally inoculated some children with good results. Thus the interest of the medical profession in the subject was aroused, and many physicians began to clamor for the opportunity to test the new virus. Jenner was summoned to return and offered a salary of ten thousand pounds if he would settle and practise in London. This was the great naturalist's reply: "Shall I, who even in the morning of my days sought the lowly and sequestered paths of life, the valley and not the mountain; shall I, now my evening is fast approaching, hold myself up as an object for fortune and fame? Admitting it as a certainty that I obtain both, what stock should I add to my little fund of happiness? My fortune, with what flows in from my profession, is sufficient to gratify my wishes; indeed, so limited is my ambition, and that of my nearest connexions, that were I precluded from future practice, I should be enabled to obtain all I want. And as for fame, what is it? a gilded butt, forever pierced with the arrows of malignancy. The name of John Hunter stamps this observation with the signature of truth." Jenner never thought it necessary to reply to unfounded and harsh aspersions, for he was satisfied with the strength of his own case.



EDWARD JENNER

Among his first patients for vaccination were many persons of high rank, among them the children of Henry Hicks, of Lady Frances Morton, and of the Countess of Berkeley. He also vaccinated the children of William IV. He was supported in Parliament by Lord Sidmouth and the Duke of Clarence. In 1808 the National Vaccine Establishment was organized, where the practice of vaccination and the supply of lymph have even since been continued.

In 1788 Jenner married Catherine Kingscote, a woman of great intelligence and culture. Her death in 1815 was so great a blow that he gave up his work in London and retired to Berkeley to spend the remainder of his life. He died from apoplexy on January 26, 1823, in the seventy-fourth year of his life, and is buried in the chancel of the parish church at Berkeley.

Those who knew Jenner have written much about his great capacity for friendship and comradeship which led to his having spent most of his life surrounded by a loving and admiring company. Even on his walks he was usually accompanied by a host of friends who delighted to listen to his comments and talks on nature. He seems to have been able to combine to a remarkable degree a talent for the profoundest observation with a lively, happy disposition, and a real genius for imparting information with the greatest simplicity and originality. He was a poet of some merit and quite a wit. He sent the following lines, accompanied by a pair of ducks, to a lady whose daughter, a patient of his, had recovered from her illness:

> I've dispatch'd, my dear madam, this scrap of a letter
> To say that Miss ——— is very much better;
> A regular doctor no longer she lacks,
> And therefore I've sent her a couple of quacks.

Because of the success of his work, his social and intellectual accomplishments, and the charm of his personality, Jenner was much sought after for membership in many learned and scientific societies. The Empress Dowager of Russia sent him a diamond ring with a letter testifying to her great admiration for his work. She had the first child vaccinated in Russia named Vaccinoff, and fixed a pension upon it for life. Many honors were bestowed upon him, among them the mayorship of his own town. Through his high position Jenner was frequently able to accomplish much good other than that of a medical nature. The story is told that he was begged to appeal to Napoleon for the release of Dr. Wickham of Oxford who was held prisoner after the close of the war with France. Jenner sent a petition to Napoleon, in spite of the fact that the latter's attitude toward England was in its most hostile stage. The petition was presented to the Emperor while his carriage was changing horses at a post. He refused to look at it. "But do you see from whom it comes?" cried Josephine, "From Jenner." Bonaparte's voice at once softened. "What that man asks cannot be refused," he exclaimed, and the petition was immediately granted. A passport to a foreign country signed by Jenner was always certain of attention and respect. In fact, the cause of vaccination was much more quickly and ardently received on the continent than in Great Britain, and its practice was perfected and established much earlier than in the great scientist's native land. His recognition in England was not official until 1803, when the Royal Jennerian Society was established, having the king and queen for patrons, and various members of the royal family and nobility for its supporters. The purpose of this organization was to vaccinate the poor gratuitously and to supply the world with virus. It was dissolved in a few years because of dissension and differences among its members.

Thomas Joseph Pettigrew in his *Biographical Memoirs* describes Jenner as "void of ostentation, and of great simplicity of manners, he never courted popularity, or sought distinction. The approbation of the highest and of the most intellectual ranks afforded him gratification, but did not beget pride. One great object occupied his mind, and everything yielded to its accomplishment; that effected, his natural disposition immediately manifested itself and he returned to the country and courted retirement."

Editorial Articles

VOLTAIRE ON SMALLPOX

Like many other brilliant nonprofessional thinkers, Voltaire was a shrewd observer in matters of health, and his advice in such wise would have been of much more value than that of most physicians of his day. He had no reason for exaggerating the evil of smallpox, to which he devoted one of his "Letters on the English." He had no medicament to sell. "Upon a general calculation," he says, "threescore persons in every hundred have the smallpox. Of these threescore, twenty die of it in the most favorable season of life, and as many more wear the disagreeable remains of it on their faces as long as they live. Thus a fifth part of mankind either die or are disfigured by this distemper."

However, he goes on to say that "It does not prove fatal to as much as one of those who are inoculated in Turkey or in England, unless the patient be infirm, or would have died had not the experiment been made upon him. Besides, no one is disfigured, no one has the smallpox a second time, if the inoculation were perfect. . . . But are not the French fond of life, and is beauty so inconsiderable an advantage as to be disregarded by the ladies?

"It must be confessed that we are an odd kind of people. Perhaps our nation will imitate, ten years hence, this practice of the English, if the clergy and our physicians will but give them leave to do it; or possibly our countrymen may introduce inoculation three months hence, from mere whim, in case the English should discontinue it through fickleness."

If the English took readily to inoculation, they have not been very thorough in more recent years with regard to vaccination. From January to May over fifteen hundred new cases were reported for England and Wales and, according to the person reporting, it is "obvious that smallpox is steadily regaining its old ascendency in this country. Its mildness, too, is beginning to change a little. Unless measures far more drastic than any heretofore put into force are taken, a great catastrophe may lie ahead."

In our own country the number of cases this year is alarming and promises to be much larger than it was last year. There is respect for vaccination only in spots. We are told that in Philadelphia, thanks to "rigid observance of school vaccination laws, smallpox in a native of that city is absolutely unknown" but in Tennessee, out of 790 children examined in the rural schools, "only forty-eight, or about six per cent., had been vaccinated." Even in a city like Detroit there is now a "normal" case rate for the disease.

Voltaire's remark about the fickleness of the French in not making use of inoculation may help to explain the nonuse of vaccination by many persons and groups of persons in this country. If one could join some exclusive order by being vaccinated, no doubt we would all go to the trouble, or if it were a more expensive performance many antivaccinationists would find it worth while.

When one considers the danger incurred by our ancestors in being inoculated with the disease we are even more convinced of its terror than by Voltaire's statistics, startling as they are. And when we compare the age of vaccination with that of inoculation we can thank our stars that we live neither before nor during the age of inoculation.

ANTHROPOLOGY OF THE HUMAN EYE

From the viewpoint of distinction between races and the determination of individual types, the orbit offers many interesting points, such as the height occupied by the orbits in the skull, the degree of the nasoocular angle, the direction of the great axis of the orbital opening, the interorbital distance, and the degree of the orbitooccipital angle. A more detailed study of the orbit, considered in respect to its internal and external shape, is likewise useful. From this study an essential difference is found between the yellow and white races, the orbits of these respective races presenting notable divergencies, between which other races may be classified. The yellow and the white races by their orbits constitute two distinct types, around which are grouped other types presented by various races and known human species.

This fact becomes more evident when the eyelids and palpebral cleft are considered, and here especially, two distinctly defined types are found, viz., the European or white, and the Mongol or yellow. The European eye is erect, well opened with smooth eyelids, and with everted normally developed lashes. The Mongol eye, on the contrary, is small, half closed, frequently oblique, with swollen, bridled eyelids, the upper lid inverted with atrophied lashes. It is also a fact that some of the peculiarities of the Mongol eye are encountered in the European, but this is exceptional and would seem to prove the common origin of all the human races, which afterwards

became separated and diversified, gradually losing the common characteristics. There exist other types of eyes, such as the American Indian, the Australian, and the Laplander, but their importance is far less than in the preceding types and their characters are not so well defined.

Considering the globe of the eye, it will be found that the principal classification between the two types —white and yellow—no longer maintains. Pigmentation is here all important, and it is the two extremes—white to black—that must be considered. Between these extremes are placed yellow, red, brown, and blond.

The globe of the eye is one of the regions of the body which bears evident marks of general pigmentation. The sclerotic is more or less tinted, while the iris offers much the same coloring as the skin and hair of the subject. The importance of this characteristic has been accepted by anthropologists and in many countries attempts have been made to draw up exact charts of distribution of color, and in Europe, particularly, the results have been conclusive, such, for example, as Topinard's color (human) chart of France. To the maximum pigmentation of the negro might be opposed the characteristic pigmentation of the albino, but this is not valid because albinism is to be regarded as a pathological process and not the lowest degree of the color scale, the negro representing the highest.

Generally speaking, anthropologists have rather neglected refraction and ocular pathology, although some observers have been struck by the influence exercised by the confirmation of the skull over ocular refraction. The anthropological study of myopia and astigmatism has received some attention, especially by Nimier, who has published some interesting data in respect to racial influence in the production of these defects, especially in France, but hypermetropia has, as far as we are aware, been disregarded.

It is hardly necessary to recall the manifest influence of the race in the production of myopia or the hypotheses of Javal and Wecker, according to whom the study of astigmatism will reveal the shape of the skull of the inhabitant of a given country by a mere inspection of their handwriting.

Ocular pathology has also been neglected by anthropologists, although it is clear that in this case the question of race is quite accessory, while individual influence is preponderant. However, it would seem that trachoma and glaucoma occur preferably in certain races, as the researches of Wecker and Chibret seem to show. It is to be hoped that further anthropological researches in respect to the eye, its anomalies and pathology, will be forthcoming, as the subject is an important one.

GASTRIC ULCER AND CANCER

Opinions among surgeons and radiologists differ widely with regard to the frequency of cancer of the stomach originating from or superimposed upon gastric ulcer. Many great surgeons hold that gastric ulcer has nothing to do with the causation of cancer; others hold that the evidence in support of the relationship between cancer and ulcer is not convincing; while yet others assert that gastric ulcer is a comparatively frequent exciting cause of cancer.

At the annual meeting of the Minnesota State Medical Association, held in St. Paul in October, 1923, a paper was read on Factors of Safety in Gastric Surgery by Dr. Donald C. Balfour, of the Mayo Clinic, and published in *Minnesota Medicine* for May, 1924. In the discussion that followed, Dr. William J. Mayo, of Rochester, had this to say with regard to the question of cancer on ulcer. His experience was based, not on all patients who came to the clinic, but on the patients who were actually operated upon for cancer of the stomach. The Mayo Clinic had been quoted as saying that seventy-one per cent. of cases of cancer of the stomach had their origin in ulcer. He doubted whether even twenty-five per cent. of the cases of cancer of the stomach observed consecutively could be actually shown to have their origin in ulcer, but that ulcer of the stomach was a serious disease, more serious than ulcer of the duodenum, and often preceded cancer.

They did not doubt, he went on to say, that the great insurance companies were anxious to know whether patients on whom operation had been performed for ulcer of the stomach and duodenum were insurable and Mr. Hunter, the vice-president of the New York Insurance Company, came to the Mayo Clinic and with his own actuaries investigated the records of about three thousand patients who had been operated upon for ulcer of the stomach and duodenum. Then through the medical examiners of the life insurance companies, these patients were traced, and as far as possible, examined; thus accurate data were obtained concerning the actual results. They were able to trace about ninety per cent. of the patients, and found that five years after operation on the duodenum for peptic ulcer, the death rate was if anything less than among the average insurable persons of the same age. The death rate five years after operation for ulcer of the stomach was two and a half times more than the normal death rate at the same period of the average insurable persons.

Dr. Donald Balfour supplemented the remarks of Dr. Mayo as to the study made by the actuarial society. He took occasion, when the report came out, to investigate as well as he could the cause of death in the gastric ulcer group, and it was astonish-

ing to learn of the number of patients who died of cancer afterwards. And then as the operative records of the patients who had died from cancer were reviewed, it was found that a large proportion had only had a gastroenterostomy done for a large irremovable lesion, presumably gastric ulcer. The lesion was usually to the pancreas, and the surgeon felt that it was not possible, or not feasible, to attempt to get a section of it. Those patients did well for a few months, then began to lose ground, and a report came within one year or two years that they had died from cancer. It is reasonable to suppose that these patients had cancer at the time they were operated upon. If that group is eliminated from the entire group of patients who have died after operation for gastric ulcer, it would be found that the expectation of life was much better than was found by the actuarial society.

While it has not been conclusively proved that cancer does follow gastric ulcer in a goodly proportion of cases, evidence seems to point that way. Even if the group of cases which Doctor Balfour believes, and apparently rightly, were cancer at the time of the first operation, be removed from the list of fatalities in the report of the actuarial society, the death rate of the gastric ulcer group will still considerably exceed that of the duodenal ulcer group, and there will be left a proportion of cases in which the patients died from cancer. If cancer is due to chronic irritation, it appears plausible and even logical to argue that a longstanding gastric ulcer is a source of chronic irritation and is apt to act as the exciting cause of malignant growth in a person susceptible to cancer, that is to say, if we grant that an individual may inherit a predisposition to cancer.

CANCER OF THE COLON AND ITS POSSIBLE CAUSES AND TREATMENT

There is no agreement between members of the medical profession as to the cause or causes of cancer of the colon. At the present time there is a large number of medical men in this country and Great Britain who hold that chronic intestinal stasis is a cause of cancer of the colon as it not only supplies the irritative factor which is universally believed to be the exciting cause, but also because the alimentary toxemia brought about by prolonged retention of waste food products in the intestine poisons and devitalizes the system and renders it less able to resist successfully the attacks of disease.

The article by Dr. E. G. Slesinger in this issue supports this point of view. He says "it is difficult to escape the conclusion that the obstructions to the passage of the contents of the bowel which develop in nature's attempts to hold up the heavy constipated colon represent the irritative factor in the production of cancer which is so clearly recognized in the cancers of the mouth and skin." If then it be allowed that irritation consequent upon chronic intestinal stasis may occasion cancer in those susceptible it seems obvious that in many cases the disease may be prevented by not permitting constipation to reach the stage of chronic intestinal stasis by careful diet and habits of life generally and by maintaining free elimination.

If the condition has continued too long and a malignant growth has formed, of course the only treatment calculated to relieve is operative. Dr. Slesinger describes measures in the early stages when the patient has been lucky enough to have his symptoms diagnosed correctly at that stage, and operative measures at later stages varying to some extent with the progress of obstruction and with the location of the growth. He does not hold with the usual operative procedure for cancer of the colon and explains why and clearly describes the operation preferred and practised by him. But Dr. Slesinger's paper deserves to be read and closely considered.

MAN AND ANIMAL

The fall of man considered physically is no myth; our sad array of clinics and hospitals is quite sufficient evidence. As J. Arthur Thompson has put the matter in a recent essay, "Wild Nature is all for health. . . . It is a remarkable fact that there is almost no constitutional disease in Wild Nature unless man has interfered. . . . Microbic diseases are rare, apart from cases where man has polluted the water or where he has altered the distribution and exposed animals to foes to which they are unaccustomed, as in the case of horses exposed to the trypanosomes of African horse sickness which the tsetse fly carries from some indigenous host, perhaps an antelope, to the newcomer.

"Many wild animals have their microbes and larger parasites, but the point is that a live and let live compromise tends to be established, and there is not what can be called disease. A few exceptions were known, such as bacterial disease of sandhoppers, but these cases may turn out to be less exceptional when our knowledge of them is more adequate. A grouse may have thousands of threadworms living as parasites in its food canal, but they do not seem to matter much unless the bird becomes, for other reasons, enfeebled. We may say, then, that outside of domestication and other forms of human interference, there is little in the way of microbic or parasitic disease in Wild Nature. Now and again the introduction of a new parasite may cause an animal

epidemic, and perhaps this is the explanation of the sudden disappearance of some species like the passenger pigeon in historic times. But wholesale infection is not likely to occur apart from man."

These remarks of the distinguished zoölogist may well make us blush for our kind, and contain food for thought for the hygienist and sanitarian.

"If there is almost no disease in Wild Nature," Thompson continues, "why does man show so much? The answer is manifold. a. Man is a restless exploring organism, and this means exposure to new microbes. And it is an invasion of the body by a microbe to which the tissues are unaccustomed that is so dangerous. The organism has or may have the ability to produce counteractives to certain microbes and parasites to whose intricacies it has been subject, but it may be unable to answer back effectively when a new invader appears.

b. "There is no getting past the fact that ambition or greed or dire necessity may lead a man to tolerate unwholesome conditions. He often stakes his health defiantly; he often stakes it in despair.

c. "Similarly, man's love of pleasure and his liking for narcotics and stimulants . . . lead, like artificiality of life in general, to conditions which favor the onset of disease.

d. " On a different plane is the fact that the general human inheritance is not in perfect harmony with the rapidly changing human environment. Our long drawn food canal was probably quite convenient when our ancestors had to eat much that was not digestible and had to make the most of a good square meal when opportunity offered, but it may be worse than inconvenient now.

e. "But there is a fifth reason, simply that it is not the human practice to select rigorously for health. . . . It must be admitted than man is a careless creature. With his head in the air he stumbles and comes to grief gratuitously."

For racial improvement Thompson offers the following general considerations: a. "The standard of health should be pitched high. We should cultivate not merely a respect for health, but an *enthusiasm*, and that enthusiasm must be loyal to the unity of the organism which is Body-Mind as surely as it is Mind-Body. . . . Respecting the unity of the organism justice must be done to the therapeutic value of the imagination. . . . That the limit of safety may be crossed by the fanatic at the one end of the inclined plane and the credulous victim of charlatanism at the other, is no argument for neglecting the use of our organs.

b. "The biological trinity, organism, function, and environment, or folk, work, and place, must be respected.

c. "Postponing the question of how far the stamina, the 'physique' *of the race* can be affected by changes in individual 'nurture,' we must point out here that there is no question as to the influence which improved 'nurture' may have on the 'health' and well being *of the individual*. Bad seed cannot be changed into good, but as far as the individual is concerned, buds of evil portent can often be inhibited and buds of good promise encouraged."

CURIOUS REMEDIES

It has been stated, perhaps with more truth than can usually be attributed to such tales, that both Washington and Cavour were killed by their doctors, as their medical attendants, in accordance with the custom of the times, bled them so that they died. Less than one hundred years ago bleeding was regarded as the panacea for almost all bodily ills and Lettsom, a great London physician, who founded the Medical Society of London, bled for all ills to which poor humanity is heir. He bled just as cheerfully and enthusiastically for apoplexy as for tuberculosis; the plethoric and the badly nourished received the same drastic treatment at his hands. Moreover, he was a firm believer in the method and is thought to have hastened his own end by cupping himself too freely and frequently. He was a thin, spare man.

There were medical practices more absurd by far than this, as on occasion bleeding did good. The great Dr. Johnson and his contemporaries held that a touch from a royal hand cured scrofula, which was known as the King's Evil, and Raymond Crawford, a physician of high repute, has written a fascinating book on the subject. Pepys, in his diary, refers to the queen's illness and says that "she had to be shaved, and pigeons were put to her feet." In country districts, medical superstitions linger long and in parts of Brittany a field mouse is looked upon as a cure for smallpox, a spider in a nutshell worn round the neck keeps away fever, three hairs from the cross on an ass's back will cure whooping-cough, though the ass will die. In England and in New England snails used to be highly esteemed as valuable in the treatment of consumption, and when boiled in barley water were held to cure an ordinary cough. Should a sixteenth century person be afflicted with warts, then according to the book of charms "Put three droppes of the blood of a wart in an eldern leaf and burie it in the earthe and the warts will vanish away."

An extraordinary remedy for gout was to place flowers of the lily of the valley in a bottle, bury the bottle in an ant heap, and then after a month, unearth the bottle, and the liquor found inside would be a perfect cure. Readers of Beaumont and

Fletcher's comedy, *Knight of the Burning Pestle,* will call to mind the instructions given to sufferers from chilblains, namely, to rub the feet well with a mouse's skin and to roll the feet and ankles in hot embers.

Quacks and sometimes even real physicians seem to have had faith in the efficacy of mumbled incantations and charms. A victim of burns by fire was advised to mumble:

> There came three angels from the East
> The one brought fire, the other brought frost.
> Out fire; in frost;
> In the name of the Father, Son and Holy Ghost.

Of course, there is a psychology of medical superstition, and in certain cases the mental influence was sufficient to improve the physical condition.

NEAR EAST RELIEF MEDICAL WORK.

The Near East Relief has recently issued in pamphlet form a report of its accomplishments in Asia Minor and the Caucasus. This report shows what a tremendous amount of persevering effort is necessary in carrying on the work of such an expedition. The Near East Relief medical organization was sent into Turkey soon after the Armistice to care for the cases of starvation, illness and injury, with Dr. George H. Washburn as its medical director. The plan was to use existing missionary hospitals. It was found that these were not only practically without equipment, but were in such bad condition that much repairing had to be done before they could be used. The first hospital unit dispatched from Derinje to Constantinople consisted of two trains, carrying the relief workers and supplies. The party lived in the freight cars and cooked for themselves. As progress was made toward the interior, portions of the supplies were left at various places where it was deemed advisable, and safe, to establish hospitals.

The report says: "This initial journey among the field stations made the way easier for the progress of the work. Some of the hospitals were two hundred miles or more from the railroad. Medical consultations in the ordinary sense were of course impossible. The doctors had to be capable of taking responsibility and acting with discretion, and at the same time to be equal to all kinds of emergencies. Tact and firmness were necessary to deal with the disordered conditions then and now present in Turkey. Cholera appeared in one of the cities of about forty thousand inhabitants. Ordinarily, when cholera starts in the Orient, it goes on for some time and takes a large toll in lives. The Near East physician in this city went at once to the authorities and received permission to use cholera vaccine in the quarter of the city where the epidemic started. About a thousand people were vaccinated in forty-eight hours and the cholera epidemic stamped out."

The report outlines work at the various units established, three of which were at different times in charge of Dr. Mabel E. Elliott, whose book, *Beginning Again at Ararat,* has already been reviewed.

Obituary.

BEVERLEY ROBINSON, M.D.
of New York

Dr. Beverley Robinson, senior consulting physician at St. Luke's Hospital, New York City, died at his residence, 129 East Thirty-fifth Street, on Saturday, June 21st, of arteriosclerosis and heart disease. Dr. Robinson had been a member of the visiting staff of St. Luke's for more than forty years. He was born in Philadelphia in 1844 of distinguished ancestry. His father was Moncure Robinson, builder of the Philadelphia & Reading Railroad, and on his mother's side he was the great grandson of Edmund Randolph, first Attorney General of the United States.

After being graduated from Princeton University in 1862, Robinson joined the State Militia and fought in the Gettysburg campaign. Later he went to Paris to study medicine, and was the first American to be graduated from the university there. In 1872 he received his medical degree with honors from that institution, and in 1873 came to New York, where he made his home for the rest of his life.

Dr. Robinson was attending physician at several of the leading hospitals of New York besides St. Luke's, and for many years was professor of clinical medicine at Bellevue Medical School. He was one of the founders of the Association of American Physicians, and at one time president of the American Climatological Association. During the World War, he was one of six American doctors to receive an honorary medal from the Faculty of Medicine of Paris.

His best known works are probably the *Treatment of Ordinary Diseases,* and *Essays on Clinical Medicine.* He was also the writer of numerous articles and papers on various medical subjects. Even during his last years, Dr. Robinson retained his interest and kept up his studies in medical science. His death is a great loss to his profession.

News Items

Medical Fellowship.—Dr. Arthur M. Master, of New York, has been awarded the Cornell University Traveling Fellowship in Medicine for the year 1924-1925.

Essay Contest.—The *Modern Hospital* offers cash prizes of $350, $150, and $100, for the best essays on the subject of Interrelationship of Hospital and Community.

Prize Award.—Dr. Evelyn Holt, of this year's class of the Cornell University Medical College, who received the John Metcalf Polk prize of $300, has been appointed as an intern in the New York Hospital, the first woman to receive this appointment.

Lunacy Law Amended.—According to the amendment of the New York State lunacy law, persons alleged as insane criminals must be sent to the observation ward of Bellevue Hospital or Kings County Hospital, instead of tested by lunacy commissions appointed by Supreme Court Justices or county judges.

Smallpox Cases.—The *Public Health Bulletin* reports 1,292 cases of smallpox in the registration area for the week ending June 7, 1924, contrasting with 474 cases in the corresponding week last year. The number of cases increased also from the preceding week in 1924. Thirteen deaths from the disease occurred during the week of the report.

Stream Pollution.—The States of Ohio, Pennsylvania, and West Virginia, have agreed to cooperate in the prevention of stream pollution.

Ammendments to Sanitary Code.—The State Sanitary Code of New York, Chapter II, was amended in various ways at the meeting of the Public Health Council held at Saratoga Springs the last of June. These amendments concern communicable diseases.

Shriner's Hospitals.—The Shriners are ambitious to build at least twenty hospitals for crippled children, and have already in operation such hospitals at San Francisco, Portland, Oregon; Shreveport, and Minneapolis, with another in St. Louis, recently dedicated. Construction is going ahead on the buildings at Montreal and at Springfield, Massachusetts, and land has been purchased in Philadelphia and Chicago. Two dollars a year is collected from each Shriner for the support of these hospitals, and treatment for orthopedic defects is given regardless of creed or race, the only provisos being that the child must show reasonable chance of cure and that its parents are unable to pay for treatment in other hospitals.

Activities of Medical Schools.—The St. Louis University School of Medicine has taken full control of the medical and educational activities of the St. Marys group of hospitals, comprising six hundred beds, which will become the University Hospital. The department of medicine has been organized on a full time basis.

Several Cleveland institutions are negotiating a merger with Western Reserve University to form a University of Cleveland. These include Case School of Applied Science, Lakeside Hospital, Maternity Hospital and the Babies' Hospital, the Cleveland Museum of Natural History, the Cleveland School of Art, the Cleveland Museum of Art, and the Western Reserve Historical Society Museum. An endowment fund of $20,000,000 is planned for.

The State University of Iowa is to have a new $4,500,000 medical building, made possible by the State appropriating funds to equal a gift of the Rockefeller Foundation. The site is near the new children's and psychopathic hospitals and the new nurses' home.

The University of Indiana Medical School has received a gift of $75,000 from Mr. and Mrs. William Coleman, as a memorial to their daughter. The gift will be used for the endowment of chairs of ophthalmology, surgery, and gynecology.

The Carnegie Corporation has granted $20,000 annually for two years to the University of Louisville Medical Department, to be used largely in developing the department of pediatrics.

Personal.—Dr. Claude Régaud, director of the Paris Radium Institute, who was in this country to attend the meeting of the American Medical Association, was entertained at dinner at the Hotel Commodore by the New York Röntgen Society and the staff of the Memorial Hospital.

Dr. Frank Billings, of Chicago, has been awarded the honorary degree of Doctor of Science by the University of Wisconsin.

Dr. Lillian Welsh, of Baltimore, has received the honorary degree of LL.D. from Goucher College, to commemorate her retirement after thirty years on its faculty as professor of physiology and hygiene.

Dr. William N. Wishard, professor of genitourinary surgery at the Indiana University School of Medicine, has recently been honored by the degree of Doctor of Laws by that institution. On the occasion of the fiftieth anniversary of his graduation, he was guest at a testimonial dinner given by the physicians of Indianapolis.

Dr. Harry Plotz, of New York, who is in Paris assisting Professor Besredka, has been made a member of the staff of the Pasteur Institute of Paris.

Dr. William W. Herrick, professor of clinical medicine at Columbia, has been elected president of the Association of Yale Alumni in Medicine.

Dr. George K. Meynen has been appointed surgical director of the Mary Immaculate Hospital of Jamaica, New York, and Dr. Charles A. Ross, its medical director.

The University of Pennsylvania has conferred the degree of Doctor of Science on Admiral Edward R. Stitt, Surgeon General of the Navy, and on Dr. James T. Priestley, of Des Moines.

Tropical Health Problems.—Health problems in tropical America are to be discussed at a conference held under the auspices of the medical department of the United Fruit Company, from July 22d to August 7th, at Kingston, Jamaica.

Civil Service Examinations.—The United States Civil Service Commission announces open competitive examinations for bacteriologist (medical), salary $3,000, and junior bacteriologist (medical), salary $1,740. Vacancies are at the Hygienic Laboratory, Washington, D. C. Application blanks may be obtained from the United States Civil Service Commission, Washington.

The Civil Service Commission of the State of New York announces examinations for pathologist, first assistant grade, State Hospital Commission, salary $2,700 to $3,300; and supervisor of physical education in State hospitals, State Hospital Commission, salary $2,500. For application blanks, address Examination Division, State Civil Service Commission, Albany, N. Y.

Society News.—The Iowa Clinical Medical Society has elected the following officers: Dr. Charles A. Waterbury, Waterloo, president; Dr. Frederick G. Murray, Cedar Rapids, vice-president; Dr. Russell C. Doolittle, Des Moines, secretary-treasurer.

The State and Provincial Health Authorities of North America have elected Dr. James A. Hayne health commissioner of South Carolina, president; Dr. Byron U. Richards, secretary of the Rhode Island Health Commission, vice-president; and Dr. Richard M. Olin, state health commissioner of Michigan, secretary-treasurer.

The American College of Radiology has elected Dr. William H. Stewart, New York, president; Dr. Samuel B. Childs, Denver, president-elect; Dr. Preston M. Hickey, Ann Arbor, vice-president; and Dr. Albert Soiland, Los Angeles, secretary.

The American Otological Society has elected the following officers: Dr. Eugene A. Crockett, Boston, president; Dr. Philip D. Kerrison, New York, vice-president; and Dr. Thomas J. Harris, New York, secretary-treasurer.

Staff Changes at the Rockefeller Institute.—The Board of Scientific Directors of the Rockefeller Institute for Medical Research announces the election of Dr. Francis Gilman Blake as a member of the Board of Scientific Directors to succeed Dr. Hermann M. Biggs, deceased.

Promotions: Associate members to members, Dr. James B. Murphy and Dr. John H. Northrop; associate to associate member, Dr. Thomas M. Rivers; fellow to assistants, Miss Gladys Bryant, Dr. Charles Korb, Miss Dorothy Loomis and Dr. Elmer L. Straub. Dr. William S. Tillett has been appointed Resident Physician at the Hospital.

New appointments: Assistants, Dr. Douglas Boyd, Dr. Clifford L. Derick, Dr. Louis A. Julianelle, Dr. Ann G. Kuttner, Dr. John F. McIntosh and Mr. Bernard J. C. Vander Hoeven; fellow, Dr. David Davidson.

Dr. Paul E. Howe, hitherto an associate in the department of animal pathology, has accepted an appointment with the Division of Animal Husbandry, Bureau of Animal Industry, U. S. Department of Agriculture, in charge of nutrition investigations.

Dr. George R. Brow, hitherto an assistant in the department of the hospital, has accepted an appointment as research assistant at the University College Hospital, London, under Sir Thomas Lewis.

Dr. Geoffry C. Linder, hitherto an assistant in the department of the hospital, has accepted an appointment at St. Bartholomew's Hospital, London, under Professor Francis R. Fraser.

Dr. Hugh J. Morgan, hitherto an assistant and resident physician at the hospital, has accepted an appointment as associate professor of medicine at Vanderbilt University.

Dr. James M. Neill, hitherto an assistant in the department of the hospital, has accepted an appointment as associate professor of bacteriology at Vanderbilt University.

Dr. Harald A. Salvesen, hitherto an assistant in the department of the hospital, has accepted an appointment as chief of clinic at the physiological institute, University of Christiania, Norway.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

London, *June 14, 1924*

ACTIVE MOTION IN RELATION TO INJURY AND DISEASE

Among the changes in surgical treatment brought about in modern times no more radical change has been introduced than the treatment of fractures and sprains as well as many postoperative conditions by mobilization. In the old days an axiom in the treatment of fractures and conditions of a somewhat similar nature was that immobilization was indicated. This method was adhered to rigorously nearly up to the time of the war. However, at the present time active exercise is regarded by many leading surgeons as a *sine qua non* of successful treatment. Among the pioneers of this new departure is Mr. J. W. Dowden of Edinburgh, who at a meeting of the Edinburgh Medico-Chirurgical Society held on June 4th last, read a paper on the subject. Mr. Dowden said that a study of the anatomy and physiology of injury pointed to active exercise as the best remedy, not only for such conditions as fractures and sprains, but in many postoperative conditions, such as infected joints, infected tendon sheaths, cellulitis, and suppuration. Action movements were essential and should be commenced at once and carried out up to the point of producing pain. The patient must be encouraged daily to persevere in using his own muscles and his own brains. Passive movement and massage were not enough. He was accustomed to commence active movements within twenty-four hours and it was remarkable how quickly the patient gained confidence and to what an extent the range of movement increased in a short time. By this means the tone of the muscles was kept up, adhesions were never allowed to form, and by the active contractions of the muscles the injured bones were gradually welded into shape and, in cases complicated by suppuration, the accumulating pus was driven from the wound. By following up cases for several years Mr. Dowden was able to show how perfect a functional result could be obtained, and x ray examinations revealed no sign of previous injury to the bones.

DIET IN MEDICINE

At the same meeting Dr. D. Murray Lyon read a paper on the Rôle of Diet in Medicine. It may be said that the rôle of diet both in preventing and successfully treating disease has never been so well understood as at the present time, for the reason that it has never been on so scientific a basis. It is claimed by some that diet is chiefly responsible for most of the chronic diseases of civilization and that the salvation of the human race under civilized conditions depends almost wholly upon suitable food. However, it should always be borne in mind that the personal equation must be taken into account, a point which is too apt to be overlooked. Also the manner and habits of life. One thing seems to have impressed itself on the minds of those who have made a careful study of the question, that the vitamine element of food must be present in sufficient quantities. Therefore uncooked vegetables and fruit should make a part of the regular diet. Dr. Lyon pointed out that dieting had proved of paramount importance in diabetes. Allen had taught us the enormous importance of regulating the diet. Dr. Lyon discussed some of the recent work done by Shaffer and Woodyatt, and drew attention to its bearing in the construction of diabetic diets. The science of dietetics was not only of interest to the physician, but was also of importance to the surgeon. Much could be done by dieting to put a patient into the best state for operation, and careful attention after surgical assistance would give the invalid the best chance of permanent recovery in the case of many gastric conditions.

Referring to the question of dieting in hospital practice, Dr. Lyon described what had been done by the institution in nearly all large American hospitals of a special class of officials known as dietitians. The position and duties of these people varied, but they were responsible for the preparation of the food, acting on the prescription of the physician in charge of the case, and by this means an unlimited number of patients requiring special diets could be handled without adding to the work of the ward staff. Another important duty of this official was to instruct those patients who required it in the best methods of constructing, preparing, and arranging their diets. From his experience in the diabetic outpatient clinic of the Edinburgh Royal Infirmary, Dr. Lyon was convinced that the exact dieting required in this disease could be satisfactorily and readily carried out in general practice even by uneducated persons.

Dr. Claude Ker said that from his experience of certain febrile conditions, he was tempted to ask if diet in these cases had any beneficial effect at all. Typhoid patients seemed to do equally well on a full diet, on a light diet, or even on practically no diet. In this connection it may be recalled that in this country, and probably in America, the custom has been to feed typhoid fever patients on milk. To give meat would have been regarded almost as a criminal act, which was certain to be followed by disastrous results. The late Dr. Frederick Smith, physician to the London Hospital, was the first here to break through this routine, and in place of the disasters predicted figures showed that his methods of dieting were better than those who relied on milk alone. Dr. Ker said that he was interested to hear more of the rôle of the dietitian, and now that such an office had been established in the Edinburgh Royal Infirmary he felt sure it would not be long before a special diet kitchen was built, which would be of great help in handling those patients who required special care.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION

This association will hold a conference in London from July 14th to 19th. The association was inaugurated in New York in 1919 and met in Geneva in 1922, when the constitution was drawn up. It is expected that some twenty-four nations will be represented in London in July, which will be the first meeting to be held under the fully constituted representative council. There will be business meetings,

and a discussion of maternal morbidity, its causes and prevention, and a full and varied program of entertainments and expeditions has been arranged. The honorary secretary of the Hospitality Committee is Dr. Kathleen F. Lander.

CONFERENCE ON INFANT WELFARE

The Third English-Speaking Conference on Infant Welfare will be held at Caxton Hall, Westminster, on July 1st to 4th, under the auspices of the National Association for the Prevention of Infant Mortality and the National Baby Week Council.

ART EXHIBITION BY MEDICAL MEN

This exhibition was held in the building of the Royal Society of Medicine, London, from May 26th to June 14th, and was remarkably good. There were about 220 paintings, etchings, water colors, photographs. Among the exhibitors were Sir Rickman Godlee, Sir William Lister, Sir Charles Tomes, Sir Squire Sprigge, Sir Harry Baldwin, Dr. Leonard Hill, Dr. A. F. Hurst, Mr. J. Hutchison, Dr. Claude Rivière, and the well known American authority on nervous diseases, Dr. Starr.

LETTER FROM PARIS

PARIS, *May 25, 1924*

(*From our own correspondent*)

SEX PROPORTION

New light was thrown on the mysterious influences which decide the sex of living things, by Dr. F. A. Crew in a lecture at the Royal Institution. Sex ratio or the proportion of males to females at birth should be as one to one, he said, but, though fairly constant and not far from equality, it is distinctly variable and is rarely in the proportion of one to one. The proportion varies with the season of the year, the season of the highest birthrate being that of the lowest proportion of males. There is a continuous drop in the sex ratio as the number of offspring increases. In the case of a fowl, the first batch of eggs yields a high proportion of males, the later eggs yielding a low proportion. In the case of the rabbit, the proportion of males is higher among the female's elder or firstborn offspring. There is no support for the theories that sex ratio is affected by differences in the age or vigor of the parents.

HIGH BLOOD PRESSURE

Blood pressure caused by the pumping of the blood through the arteries is, of course, essential to life. Danger arises when the pressure becomes too great and hardened arteries give way. Excessive tension of the arteries is a symptom rather than a disease. It is a symptom that appears after certain changes in the structure and in the functions of the body have occurred, some of which we have been able to trace, though others still remain unknown. The high blood pressure is needed for the welfare of the body as changed. It is these changes, whatever they may be, that must be sought out and, where possible, removed.

Regular exercise, taken in fresh air, is essential to health and is one of the most important of the measures for the prevention of the processes that lead to high blood pressure. Habitually heavy meals, whether served at noon or in the evening, are among the important factors concerned in the origin of the arterial hypertension of later life.

The poisons retained in the system and circulating in the blood as a result of impaired kidney function are a potent source of damage to the arterial walls. Apoplexy, serious as it is, does not occur as frequently as many people imagine. Caffeine, nicotine and alcohol have been accused of being potent causes of arteriosclerosis but recent researches do not seem to support the accusation so far as moderate use is concerned.

Cultivate tranquillity, avoidance of bad colds, sore throats, and tonsillitis, which are capable of doing great harm to the heart. Take ample recreation and holidays, and let meals be unhurried. Sleep in the open air. The modern house that is not well supplied with sleeping porches is incomplete. Most important of all, the cares and anxieties of the day should be shed by the mind at bedtime just as thoroughly as the clothing is removed from the body.

LECTURES FOR FOREIGN STUDENTS

The Inter-University Institute of the University of Rome is arranging a course of lectures for foreigners. The subjects will be the papacy in the first centuries of the Middle Ages, the history of medieval and modern art, Italian literature, the history of music, the Sistine Chapel, the Palazzo Venezia and the Borghese Gallery, with an excursion to Orvieto and a lecture in the chapel of the Signorelli; the churches of San Clemente, Santa Maria in Aquiro and Santa Cecilia in Trastevere, the Lateran Museum, with visits. Students who join these courses have free access during the period to the museums and galleries of Rome. Information may be had from the secretary of the Inter-University Institute, Signora Maria Antoinetta Scotti, at the Palazzo Venezia.

THE AMERICAN MEDICAL SOCIETY OF PARIS

This society held a successful meeting recently at the American University Union, under the presidency of Dr. Edmund L. Gros. Physicians, both from Paris and various parts of the United States, listened with attention to the interesting address of Dr. P. Armand-Delille, physician to the Hôpital Debrousse and the American Hospital of Paris, who described the modern methods of diagnosis and treatment of pulmonary and bone tuberculosis. The outdoor treatment in pure air and sunshine still gives the best results, he said, and Dr. Armand-Delille sounded a note of warning against socalled specific serums, which have never demonstrated their efficiency and often lead to neglect of the climatic treatment which alone can effect a cure.

He showed the great mortality of poor children whose parents were tuberculous, the contagion often taking place through the eyes. Prof. Léon Bernard and Prof. Bezançon have shown that sixty per cent. of these young children die of tuberculosis if left in their homes in contact with their parents, while if these same children are sent to the country the disease develops in less than three per cent. With regard to diagnosis, the x ray still remains the best method. Blood reactions are being

studied by Besredka of the Pasteur Institute, but so far, have given few results because almost every inhabitant of a big city has at one time or another had some tuberculous lesion which nature has cured without treatment, but which suffices to produce blood reaction (complement fixation) similar to those occurring in progressive tuberculosis. Dr. Armand-Delille reported wonderful results with children in whom unilateral tuberculosis existed, by artificial pneumothorax. These children run about and play, one lung being quite sufficient for their respiratory needs. This treatment must be kept up for three years to obtain a cure.

Dr. A. Bruno then spoke of the work of the Rockefeller Commission in France, and showed that there were now about 421 antituberculosis dispensaries in France, as against 600 in the United States. These have all been developed since the commission came to France. The weak side of the treatment now consists in the great lack of sanatoria in France for poor people. There are about nine thousand beds in all in France, where about sixty thousand are needed, and only 729 beds for middle class or paying patients. Films of pulmonary lesions and the destruction of bacteria by phagocytes were shown.

NOTED AMERICANS IN PARIS

Dr. Eugène Lyman Fisk, medical director of the Life Extension Institute of New York, has arrived in Paris on a tour of France, England and Italy. It is his purpose to confer with leading health authorities with regard to the development in Europe of the plan for extending human life by means of periodical health examinations and the practical and direct application of the laws of individual hygiene.

Surgeon General Hugh S. Cumming, U. S. Public Health Service, attended a meeting of the League of Nations Health Committee held in Paris recently. Before coming here he had conferred with the Ministry of Health in London regarding quarantine arrangements at the five leading British ports. After the conclusion of his Paris conferences, he will go to Rome as delegate to the International Conference on Emigration.

Dr. Robert Kelly, director of the American Association of Colleges, spoke to some two hundred students and professors at the Sorbonne on the American educational system, defining particularly the modus operandi of the liberal and vocational schools and colleges. "The tendency in the United States," said Dr. Kelly, "is for the high school to throw off the domination of the college and university. The colleges, as a result, have followed in the footsteps of the State universities, and have lowered their entrance requirements. A discovery made by surveys of educational institutions by the Carnegie Foundation disclosed the fact that while colleges allow an increasing flexibility of subjects, the students still concentrate on those subjects that have always been considered fundamental."

Mrs. Josephine Dascom-Bacon, the short story writer, will be the guest of honor at the monthly club luncheon of the American Women's Club. Mrs. Bacon will read some of her new and unpublished stories.

Miss Hogg, art lecturer, will speak for the benefit of the American Women's Club. The subject will be "The Works of Rodin." The entire proceeds of the lecture will be donated to the New Club House Fund.

Dr. H. P. Judson, president emeritus of the University of Chicago, chairman of the Committee of the American University Union, and one of the original trustees of the Rockefeller Foundation, has arrived in Paris, where he will remain until late in June, before visiting Norway, Sweden, and Denmark in behalf of the American-Scandinavian Foundation. Dr. Judson is president of the Chicago branch. An extensive interchange of American and Scandinavian students is being planned. The American-Scandinavian Foundation has lately received large funds, Dr. Judson said, among which was a bequest of half a millon dollars left by a Scandinavian. Dr. Judson said that the American University Union is now organized on a firm basis in America, thanks to the Laura Spellman Rockefeller Memorial, which gives to the Union $25,000 a year for five years.

A major of the United States Army is one of the members of a military mission which is visiting the battlefields of Verdun and Metz with a view to investigating the lessons in strategy to be drawn from the fighting in this region during the war. The mission includes ten French generals and several colonels, as well as high grade officers from the Serbian and Greek armies.

VIENNA LETTER

(From our own correspondent)

Vienna, *January 12, 1924*

IMPROVED CONDITIONS IN AUSTRIA

The change of conditions in Austria, socially, industrially, and in science and art, which is nothing short of marvelous, has set in with the stabilization of the currency, brought about by the loan the League of Nations secured for Austria in September, 1922. This stabilization of the money system has resurrected a people which for years bravely faced utter misery almost without hope. The revival of interest in medical progress can not be understood unless viewed from the viewpoint of economic restoration. The financial restoration is well illustrated by the report which Dr. Zimmerman, the controller of finances appointed by the League of Nations for Austria, submitted in Geneva in September, 1923. The currency of Austria has become the most steady money in Europe, returning Vienna to its former place as an international trading centre. The harnessing of waterpower in the Austrian Alps, managed mostly with the help of Austrian money, will become a great asset in Austria's trade balance, as it will make unnecessary for Austria to pay those tremendous sums for coal importations.

The saving policy cut deep into the existence of Vienna's scientific and medical institutions. Professor Menghin, for instance, complains of the miserable conditions in the prehistoric department of the Vienna University; the monthly salary of a younger professor is about three million kronen (forty-five dollars), as much as a washerwoman

vill earn. The institution, which was founded by Hoernes in 1899 and has since become internationally famous, has been allotted a room in the basement of the university, underneath a row of waterclosets; the latter often causing an intolerable stench by leaking through the ceiling; the ventilation being unsatisfactory, Professor Menghin finally succeeded in getting a room outside the university. His institution gets a subsidy of two hundred thousand kronen a year from the government—three dollars. One may easily understand such a state of affairs if one knows that the government spent five hundred billion kronen for the army last year, but only half of this amount, two hundred fifty-eight billion, for *all* of its educational institutions. This saving policy of the government, commendable though it be, has wrought havoc also with the once famous anatomic institution of Vienna. The dead bodies of poor people, not claimed for burial by relatives, socalled flunked bodies, used to be transported from the hospitals to the anatomic institution by the city's undertaking establishment. The minister for social administration broke the contracts with the city and entered into a contract with another firm, because the latter offered to bury the poor people's corpses or transfer them to the anatomic institution without any charge, beside paying the government a yearly bonus of seventy million kronen! This latter firm tried to squeeze out of the relations of such flunked corpses at least a part of the burial expenses by telling them they would not deliver the corpses to the anatomic institution if the relations paid them some money. And the consequence of this poor saving policy is this: In the year 1921-1922 the anatomic institution obtained seventy-eight bodies. In the year 1922-23 it received only twenty-two bodies. This year it received to date only one body. As there are about one thousand students who wish to do dissecting, only the native students can be admitted to the work. The foreigners, who by their large tuition fees make the running of the institution possible, are excluded from the work.

Owing to the saving policy of the government, the chemical departments of the university came near closing their doors. The chamber of commerce decided to bring help; after convincing the prominent industrialists and merchants of the absolute necessity of having fully educated young chemists in their employ, it succeeded in collecting one hundred million kronen, which, in addition to the supply of chemicals, glass and china ware and other utensils, free of charge, was sufficient to save the situation.

A man by the name of Bosel, now president of one of the strongest banks in Vienna, offered the university any amount of money needed to carry on its scientific research.

In the course of last year there were brought before the juvenile court of Vienna 127 children, aged from ten to twelve years, 570 aged thirteen to fourteen years, 1,107 aged fifteen to sixteen, and 826 aged seventeen to eighteen. They were accused mainly of theft, but many also of burglary, fraud, arson, rape and—the girls—of prostitution. The stories of Victor Hugo are mere fairy tales compared to the wretched stories heard in this court. All these youngsters have been brought up and fed on war and its virtues. In Vienna, Munich, Budapest, Berlin—in every place of the defeated world—these youngsters are collecting daggers, poisons, bombs.

ABORTION

Another sign of reawakened public conscience is the present attitude of the courts toward commercialized abortion. The State prosecutor maintained, in an edict addressed to the medical organization, that it is the duty of every physician to bring cases of criminal abortion, even if only suspected by him, to the notice of the prosecutor's office or run the risk of being prosecuted himself. This edict created some excitement among the physicians, who refused to do detective work for the public prosecutor. In November last, several physicians were called before the court, accused of criminal abortion. Two of them, quite prominent practitioners, were found guilty and received a sentence of three months in jail. Thereupon the medical society of Vienna called a special meeting and passed a resolution addressed to the Minister of Justice in which it petitioned that the court should employ in the future as medical experts on the stand not pathologists—as heretofore—but exclusively physicians with clinical experience, conversant with the responsibilities of a practitioner at the bedside; the pathologist might do for autopsies but he is not supposed to know much about the clinical requirements of the physicians at the bedside of living patients. Another prominent physician wrote an article in the daily press, elaborating on the modern viewpoint on abortion, stating that the indications for legal interruption of pregnancy should not be merely of a medical nature, but also of a social and economic nature; that the present law concerning those indications is too narrowly drawn for modern requirements. This present attitude of the Medical Society of Vienna, if compared with the personal attacks, directed against me, for having mentioned commercialized abortion in my last report to the MEDICAL JOURNAL AND RECORD (April, May, June 1923), seems rather paradoxical.

MEDICAL OPTIMISM

However, there is no doubt, that the members of the medical profession whom the war has not rendered hopelessly decadent, are trying their hardest to get on their feet again. Witness thereof are the two lectures delivered by that jovial, honest straightforward Dutch Professor Wenckebach. He spoke, after his return from the United States, on "What We Can Learn from America," and his observations were certainly to the point and much appreciated by the crowded audience. Among other things "we should learn to do away with titles," he said. I am the native of a country where no titles exist and no heed is paid to formalities. It would be a glorious deed for the Austrian physicians if they would follow the example set by their American colleagues and do away with that abominable councilor business. The Medical Organization, two months before this lecture was delivered, had passed a resolution asking the government to stop the granting of such titles as Medical Councilor, because it was not in keeping with a democratic mentality and besides, was misleading the public, which looks upon such titles as a sign of better medical qualification, while, in fact, they were merely the sign of a certain influence the bearers had with the granting authorities.

Book Reviews

CANCER

Cancer of the Breast. With a Study of Two Hundred and Fifty Cases in Private Practice. By L. Duncan Bulkley, M.D. With Forty Illustrations. Philadelphia: F. A. Davis Company, 1924. Pp. x-336.

For forty years the author has studied cancer from medical rather than surgical lines and he says he has obtained much better results than are obtainable with other plans of treatment. The theory is advanced that cancer of the breast is a general disease (carcinosis) with local manifestations in the breast, "with exaggerated and distorted cells originally normal, which, having mutinied and lost their nervous control, and having thrown off their physiological allegiance, no longer perform their former secreting function, but having still the power of growth, multiply and form the useless and ultimately harmful masses" called cancer. The perverted action is attributed to a perverted or erroneous condition of the blood from which the cells receive their nutrition, the actual mutinous action being excited by an external agent as a local injury, surgical interference, or a pus forming microbe, or possibly from an internal irritating cause, as uric acid.

In the chapters on anatomy and physiology of the breast, lymphatic permeation, carcinoma and Paget's disease, sarcoma of the breast, and on diagnosis and prognosis, nothing new is presented, but when we come to the chapters on the medical aspects and the treatment of breast cancer, the views expressed are held by few, if any, except the author. However, in view of the fact that cancer appears to be constantly on the increase in spite of all forms of treatment, these statements deserve at least consideration, no matter how radical in thought or conservative in action they may appear to be. In substantiation of his theory, eminent authorities of the past century are cited, but the citations refer only to theories and possibilities and not to actual facts or incontrovertible data; they are merely opinions and can be classed only as such. They need proof.

The causes of the disturbed and perverted metabolism are studied under the following heads: food and mode of life, faulty metabolism, imperfect blood stream, erroneous body elimination and nervous disturbances, all of which are admittedly much too prominent today. However, no single cause can be made responsible for the occurrence of cancer, nor is there a single remedy to cure it. The author says that "the most careful medical treatment accomplishes far more than the methods of treatment in vogue of late years," especially surgery. The latter is said to be directed to the local manifestation and not to the disease itself. In the treatment of breast cancer, surgery is discredited and the favorable reports on it are attributed to faulty diagnosis. Irradiation (x ray and radium) therapy is also discredited. Caustics are favored because they prevent lymphatic permeation. Chemical removal, as practised by Strobel, is endorsed, but only in association with a thorough and intensive medical measure. Biotherapy, with the exception of Coley's fluid and proteotherapy in carcinoma, is said to be ineffective. Great stress is laid upon dietotherapy, which should be persisted in permanently to avoid recurrences. An absolutely vegetarian diet is recommended. Fruits, especially raw, are now believed to be beneficial. Hygienic living, the promotion of elimination by the emunctories and the correction of faulty habits or conditions of life are most important elements in the treatment. Opiates and most sedatives are blamed for increasing the carcinosis by interfering with the glandular structures and thereby vitiating the blood stream. The medical treatment should include potassium salts, phosphorus and iron. Aspirin is recommended for the relief of pain. The local treatment includes ichthyol, diachylon ointment and calamine and zinc, with or without morphine (sic!), phenol, hydrogen peroxide, potassium permanganate and cocaine (for pain).

Sixty-one case histories are reported and give the impression that the author has failed to prove that medical treatment is superior to the surgical treatment of today. In many cases the treatment outlined has failed to prevent the advance of the cancer and to allay the sufferings of the patient. The treatment recommended will aid in cancer as well as in any other condition or disease, but there is nothing specific about it. On the whole, the book is disappointing because it fails to prove its point. It is full of theories, but no effort toward proof is made. Surely forty years of experience should have brought forth something more definite! If there is a germ of truth in the theory advanced, the author has not succeeded in bringing it out.

CARCINOMA OF THE UTERUS

Die Röntgenbehandlung des Uteruskarzinoms. Von Dr. Med. et Phil. Hermann Wintz. Mit 50 Lichtdrucktafeln. Leipzig: Verlag von Georg Thieme, 1924.

The Seitz and Wintz technic of deep x ray therapy for carcinoma of the uterus, as it is used at the Erlangen University Gynecological Clinic, is described. Only the fundamental principles are mentioned but the minor details must be varied to suit the individual case. Although the proper apparatus is an important element in the successful carrying out of the technic, nevertheless the medical attention and the proper dose are most important elements. The basic principle of this form of treatment is the fact that a minimum of ninety per cent. and a maximum of one hundred and ten per cent. of the skin unit dose is the proper dose for the entire carcinomatous area. Three phases are distinguished in the reaction: 1, the destruction of the viability of the carcinoma cell; 2, the degeneration of the carcinoma cell and elimination of the degeneration products from the body; 3, the growth of healthy body tissue at the site of the neoplasm. The single maximum dose is indicated in ovarian irradiation, but it is a necessity in carcinoma of the uterus. The duration of the maximum dose should be as short as possible. The preradiation and postradiation treatments must take into consideration the effect of the treatment upon the entire organism and the resulting local injury must be as slight as possible. The

preradiation treatment is given as long as the initial reaction, which usually lasts fourteen days, continues. The general practitioner or the attending surgeon is given detailed instructions in regard to the postradiation treatment. The preparatory treatment is described in detail, as are also those of the irradiation treatment. The copper plating process, which is an essential part of the treatment and consists of the elements of electrolysis and cataphoresis, is accurately described. The aids used in the proper focusing of the rays and the postradiation treatment are also discussed. There are fifty photogravures, which illustrate the manner of irradiating the primary tumor and the parametria. The technic varies in women with normal deposits of fat and moderately broad pelves from that used in very obese women and very broad pelves. In each case the anterior and posterior fields of ray concentration are shown and marked. The manner of irradiating the parametria in one or two stages are also shown. The Chaoul-Langer technic of focusing is illustrated. There is also a plate showing a false method of focusing and one showing an x ray burn due partly to adhesive plaster.

The book is an excellent treatise on the Seitz-Wintz method of deep x ray therapy.

THERAPEUTIC VALUE OF SUNLIGHT

Sunlight and Health. By C. W. Saleeby, M.D., Ch.B., F.Z.S., F.R.S.E. With an introduction by Sir William M. Bayliss. New York and London: G. P. Putnam's Sons, 1924. Pp. 198.

The discoveries of the last few years and the recognition that sunlight in itself is a powerful health giving and restorative agent, have abundantly justified Dr. Saleeby's persistent advocacy of the therapeutic use of sunlight. This book gives an outline of the whole interesting field of the phenomena of this subject. We know already that the most striking effects of light have shown themselves in the cure of such diseases as rickets and tuberculosis, and that it also prevents the development of these under circumstances when otherwise they would assuredly show themselves. Hence, we see the justification of the efforts being made to prevent pollution of the atmosphere by smoke, in which efforts Dr. Saleeby has taken part energetically. There is still much to be learned of the way in which light acts, and as to the particular rays of the spectrum which are active in different cases, and one of the services of this book is to indicate these gaps in our knowledge, and to incite research with a view to filling them.

Dr. Saleeby states that his book is designed for the medical profession and the public, to commend sunlight as the primary and hitherto most neglected means of health and medicine against disease. He attributes to himself no new discovery; for Hippocrates himself, the Father of Medicine, advocated the use of sunlight as a cure, and built a sanatorium where patients might avail themselves of such a treatment. The ideal combination, Dr. Saleeby believes, is cold and sunlight, and he states to confirm this opinion that the Canadians, who enjoy these conditions, thrive under them and are one of the healthiest peoples in the world. He urges the abolition of coal fires and the building of houses which will receive a maximum amount of sunlight.

DIABETES

Diabetes. A Handbook for Physicians and Their Patients. By Philip Horowitz, M.D. With Thirty-Four Text Illustrations and Two Colored Plates. Second Edition Revised and Enlarged. New York: Paul B. Hoeber, Inc., 1924. Pp. xii-219.

The aim of this second edition is the same as that of the first—cooperation between the doctor and patient and also to incorporate the latest methods of insulin therapy and the calculation of maintenance diets. The insulin treatment of severe and juvenile cases is thoroughly discussed. The proper maintenance diets are worked out and seventeen new formulæ and recipes are added. The Van Slyke test for the carbon dioxide combining power of the plasma and the Folin and Wu sugar test are essential when insulin is being used. Cases showing various phases of diabetes and complications and their methods of treatment are cited. An intimate knowledge of dietetics is necessary to balance accurately the diet and insulin. The author does not recommend insulin therapy in mild cases because the ordinary dietetic treatment seems to be able to restore the pancreas to function after a mere reduction of the sugar in the urine and the blood.

After going into the general considerations of diabetes, mild, moderately severe and severe cases of diabetes are discussed. Acidosis and coma, the complications, hypoglycemia and the value of hygiene and exercise are then taken up. A separate chapter is devoted to menus, recipes and tables of food values, which should be very helpful. The following chemical tests are described in minute detail: the Benedict qualitative and quantitative tests for glucose in the urine, a rapid test for estimating the sugar in the urine, the sodium nitroprussic test for acetone, the ferric chloride test for diacetic acid, the Folin test for blood sugar, the Van Slyke test for plasma bicarbonate and the Epstein microcolorometric test for blood sugar. The appendix gives a short history of diabetes. The purpose of this little book is well carried out.

AUTOSUGGESTION

Selfhealing by Autosuggestion. By A. Dolonne. New York: E. P. Dutton and Company, 1923. Pp. v, 110.

Dolonne believes that he has delivered the subject of autosuggestion from its mysterious character and established it upon a scientific basis. He has pointed out, it is true, that its apparent mystery is to be found explained within the mind of the individual himself, in activities taking place beneath consciousness. He has given us, however, no scientific revelation as to how such activities take place nor as to their nature. By his mere reiteration of words in terms of his own enthusiasm he has only substituted one mystery for another. We agree with him that that which takes place in the mental life influences bodily health as it forms the basis of mental health or illness. But instead of a lucid analysis of such mental activity he is content to deliver himself and his reader over to the spell of sounding phrases. He is an evident victim of the autosuggestion which he conceives and upholds. Repetition in a certain hyperbolic enthusiasm of thought and speech may arouse the attention of many readers to make them devoted adherents of this sys-

tem of healing. For affective cravings are gratified in a variety of ways. An intellectually active mind, on the other hand, cannot be satisfied with mere statements such as "Autoeducation will make our children intelligent and energetic men—noble, loyal, proud and happy," and other such effusions of an exalted optimism. Nor is it easy to accept autosuggestion as here set forth as a "moral serum which plays a decisive part in all diseases." This author does not believe in analysis, he says, but intelligence demands to know something of the content of the idea for which Dolonne claims the decisive power over the mind. It requires also a more correct science of psychology and of neurology than he has at his disposal. What must be said of a statement like this? "If the same nervous centre is applied to every day, if every day its activity is stimulated by carefully practised autosuggestion, from force of habit this nervous centre develops and grows and its nerve cells multiply. Where formerly there was only one nerve cell, there will now be ten or twenty, discharging a function ten or twenty times as great."

CLINICS

International Clinics. Edited by Henry W. Cattell, A.M., M.D. Volume IV. Thirty-third Series, 1923. Philadelphia and London: J. B. Lippincott Company.

Twenty-six contributors take part in the current volume of this popular publication, the outstanding feature of which is a symposium on gastrointestinal ulcers, by M. J. Stewart, of Leeds, England, Samuel Danon, of Geneva, Switzerland, Seale Harris, of Birmingham, Alabama, and T. A. Groover, A. C. Christie and E. A. Merritt, of Washington, D. C. Another striking feature of this volume is the Alvarenga Prize Essay of the College of Physicians of Philadelphia for the year, 1923, entitled "A Treatise on Echinococcus Disease," by E. B. Heller, of Kansas City. This essay represents an effort on the part of its author to assemble all of the important facts regarding echinococcus disease into one monograph. The lay public will be interested to learn that the solution of the problem of prevention of this disease is to be found in the segregation of dogs and cats. The author illustrates the pathology of the disease in a number of the organs of the body by means of photographs of specimens from his own case, an ape, Cynocephalus porcarius.

Judson Daland, of Philadelphia, has an interesting article on "Altitude Sickness the Result of Hemoglobin Deficiency," and D. N. Eisendrath, of Chicago, presents a useful paper on "Tuberculosis of the Kidney." All the papers are of excellent quality and the typography and illustrations all that could be wished for.

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The Surgical Clinics of North America. February, 1924, Volume 4, Number 1. Philadelphia Number. Philadelphia and London: W. B. Saunders Company, 1924.

A large part of this volume is devoted to fifteen contributions by the bronchoscopic clinic of Chevalier Jackson. These range from a clinic on pyloroscopy, by Dr. Jackson, to Shallow's clinic on gastrostomy, in which a new technic is demonstrated. Newcomet's clinic on the use of radium in cancer of the larynx is exceptionally interesting, as is Lukens' clinic on pulmonary abscess following tonsillectomy.

Deaver and Reimann contribute an instructive clinic on the essentials of surgical diagnosis which deserves most careful attention. Behrend's clinic on the symptoms and pathology of acute intestinal obstruction is most timely and instructive. Additional clinics combine to make this number one of the most attractive of the series. The usual excellence in typography and illustrations is maintained.

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The Surgical Clinics of North America. (Mayo Clinic Number)—April, 1924, Volume 4, Number 2. Philadelphia and London: W. B. Saunders Company, 1924.

Thirty-three members of the Mayo staff contribute to this volume. The clinics are of the usually high order, splendidly and freely illustrated. Bumpus presents an interesting clinic of a case of complete urinary retention complicated by extensive destruction of renal function, the result of prostatic hypertrophy. Five days were consumed in emptying the bladder in this patient, an evidence of the great care exerted to maintain a continuous but diminishing blood pressure and thereby avoiding serious risk of untoward symptoms or death.

Scholl and Judd have an instructive clinic on hydronephrosis and pyonephrosis, Buie a clinic on carcinoma of the rectum, and Vinson an excellent clinic on obstructions of the esophagus and cardia. The volume contains 179 illustrations.

CRISIS

The Book of Blanche. By Dorothy Richardson. Boston: Little, Brown & Co., 1924. Pp. 358.

Not many writers have the gift of seeing and seizing *the* moment of the lives they portray. In Blanche Walska's history there is so much that might have stood for the revolving pivot; her mother's tragedy; her childhood; her miraculous moment of triumph. But the *Book of Blanche* opens at the one page of Eugene Sevier. And from that page lead a thousand ramifications. For Sevier has a book of his own. And as Blanche's draws to a close, Sevier's begins. There will be living, heartrending year after year. There will be work to deaden, inexorable progress. And there will always be the few pages of Blanche to read anew and to keep him going.

Sevier is the house surgeon at the hospital to which Blanche Walska is brought for a cancer operation. She is the illegitimate child of a world famed violinist. Her whole being has yearned towards one goal—a career. And she has worked for it tirelessly until fate stepped in. The burly Southern doctor and this flowerlike foreign girl are swept into one of those vibrating vortices of emotion for which only the violin lover can attempt the simile. Blanche is at the hospital for a few brief weeks. Like two moths, they flutter about the flame of their love. There is no escape. Blanche has her chance to a certain extent. She triumphs for a night on the concert stage. Perhaps life could hold no deeper joy than her love and her success. The next morning brings the end. And Sevier is left with the memory, the pain,—yet knowing desperately that it could not have been otherwise.

Miss Richardson has a true gift. Her focus on her picture is perfect. There is music in her writing, harmonies or words and thoughts that bring as full contentment as color or sound harmonies. She is a creator, and has shaped flesh and blood.

Medicoliterary Notes.

The Show-Off, a comedy by George Kelly, is a fine piece of human psychology both in conception and interpretation. Louis John Bartels has the title part.

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A King's Morning Talks to His Brother's Son is the title of a curious old manuscript recently brought to light among other of the German official archives. It is supposed to have been written by Frederick the Great for the benefit of his nephew and its style shows the author's characteristic cynicism and irony. His definition of politics is worth quoting. "As soon as men came to the conclusion that it was sinful and base to deceive their fellowmen, they began to hunt about diligently to find a word that would condone such actions with a pleasing name. They hit upon the word *politics*."

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The publication of a new periodical has recently been announced—the *Journal of Scientific Instruments*. It will be issued by the British Institute of Physical Science in connection with the International Physical Laboratory. The editor is Dr. John S. Anderson .

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That prolific writer, William S. Walsh, is the author of another recently published work entitled *The Mastery of Fear*. The book is an interesting contribution to the psychology of neurotic and neurasthenic as well as normal fears.

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A new publication of Longmans, Green & Co. is *Crime and Insanity* by Dr. W. C. Sullivan, medical superintendent of Broadmoor Criminal Lunatic Asylum. His point of view is that of the criminal as a social problem.

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The *Saturday Review of Literature* is a new independent weekly under the editorship of Henry Seidel Canby, William Rose Benet, and Amy Loveman, all formerly of the New York *Evening Post*. The same group founded in 1920 the Post's weekly *Literary Review*.

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Toronto has a new magazine entitled *Hospital Buying*. Its editors describe it as "a magazine for hospital executives." It consists for the most part of news and information about Canadian hospitals.

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Arthur Rackham, the well known illustrator of fairy tales, is making illustrations for Christopher Morley's *Where the Blue Begins*. The pictures of the dog people in the book are said to include a number of clever caricatures of familiar human types.

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That the newspaper plays a vital rôle everywhere under all conditions is proved by the demand of the inmates of the Kalaupapa leper settlement on the island of Molokai, Hawaiian Islands, for permission to run a newspaper for themselves which would be financed by a few wealthy residents of the settlement.—*Nation's Health*.

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Irwin Erdman has an entertaining article in the *Century* for June on *We Superstitious Moderns*, in which he advances the theory that the people of today believe as firmly in their "medicine men" and socalled miracle workers as did any of the ancients—and one of the greatest of these modern curealls is the *libido!*

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I look my age, and I am my age. It is the other people who look older than they are. What can you expect from people who eat corpses and drink spirits?—*Bernard Shaw* in *Harpers*.

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Chili has an ambulance under government operation that is run on the railroad track. It is constructed like the ordinary public autoambulance, differing only in its ability to run on a track.

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Remnants of the original tablets of the Ten Commandments, it is believed, have been deciphered by Professor Grimme of the University of Münster. "I was taken out of the Nilus by an Egyptian queen" is written in Hebrew so old that it is almost a forgotten tongue at the top of one of the tablets. They contain also the names of Joseph, Menassa and Moses. The tablets were discovered on a plateau of the Peninsula of Sinai by Flinders Petrie.

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New York State has more playgrounds than any other State in the Union, according to figures recently compiled and published by the Playgrounds and Recreation Association of America. New York has 858, Massachusetts 706, and Pennsylvania 687.

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One of the new publications announced by Putnam is the *Life and Letters* of Mary Putnam Jacobi, edited by Ruth Putnam. Mary Putnam Jacobi studied at the École de Médecine in Paris more than fifty years ago. After completing the course there with honors, she came to New York City and devoted the rest of her life to work among the poor. The book should be of interest to all interested in the long fight made by women to gain recognition, not only in the field of medicine, but in that of professional life as a whole.

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Hell-Bent fer Heaven, by Hatcher Hughes, the play that received the Pulitzer prize for the best play of 1924 dealing with some phase of American life, has been published in book form by Harper Brothers.

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In a recent number of the *Bookman*, Mary Austin discusses the subject of *Genius and Temperament* in the fourth article of her series on *Making the Most of Your Genius*.

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The Paris press has announced the finding of Voltaire's heart in a small casket which was placed many years ago for safe keeping in the National Library of Paris. In a little used room of the building Roland Marcel, new curator of the library, noticed on his first round of inspection a plaster bust of Voltaire beside which was a wooden pedestal with the inscription "Voltaire's heart." M. Marcel found the button of a secret trap, which, when pressed, disclosed a small compartment containing the little casket with the heart. No record had been kept of its hiding place so it had been entirely forgotten.

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The results of some investigations on the actual practical usefulness of tests and test methods in business, and the possibilities of their future development, are discussed in a recent publication of the University of Chicago Press entitled *Psychological Tests in Business*. The authors are A. W. Kornhauser and F. A. Kingsbury of the department of psychology of the University of Chicago.

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The Life and Letters of Emily Dickinson, by her niece, Martha Dickinson Bianchi, recently published by Houghton Mifflin Company, is interesting material for psychoanalysis. Miss Dickinson, who was born in 1850, lived almost as a recluse for the greater part of her life at Amherst, Mass., her birthplace, yet her poems show a keen understanding of life and knowledge of human nature.

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The New York Association for Improving the Condition of the Poor has recently issued two interesting and valuable little pamphlets written by the director of the department of social welfare, John C. Gebhart. These are entitled respectively *The Health of the Neighborhood*, a survey of six years of public health work in the Mulberry district of New York City; and *Tuberculosis, a Family Problem*, an analysis of ten years' work at the association's home hospital, demonstrating the effectiveness of properly directed treatment of tuberculosis in the home as a means of supplementing existing sanatorium facilities.

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A graduate nurse who is a fullblooded Indian has been assigned by the State Department of Health and Welfare of Nebraska to maternity work among the Indian women of the State reservation. This new project has been undertaken under the provisions of the Federal Maternity and Infancy Act.

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Amazona is the name of a new coffee substitute found in Venezuela and said to have all the properties of coffee except the caffein. It is the fruit of a weed growing in abundance and used to make a beverage by the Meta Indians after they have toasted it.

Abstracts from Current Literature

MALIGNANT GROWTHS

Lymph Glands in Carcinoma of Small Intestines.—W. McK. Craig (*Surgery, Gynecology, and Obstetrics,* April, 1924) presents tabulated reports on series of cases and abstracts thereof, reaching the following conclusions:

Although resection of the bowel with all associated glands is the operation of choice and produces the best postoperative results, yet anastomosis around the lesion results in a high percentage of postoperative longevity.

In considering the three anatomical divisions of the small intestine with regard to postoperative progress, in cases of carcinoma, it was found that the prognosis is most favorable in cases in which the lesion is in the jejunum. The hospital mortality was the least, and the percentage of longevity greatest in these cases. Lesions of the duodenum are not only difficult to eradicate, but by the time they become manifest, they are so advanced that ablation is impossible. There seems to be a high hospital mortality from lesions of the ileum. The only patient living any length of time had a malignant papilloma which was extirpated, and there was no glandular involvement. Carcinoma of the small intestine is the least common form of gastrointestinal malignancy. The majority of patients are between forty and sixty years of age. The most common site of primary malignant neoplasm in the patient's series was the jejunum which contained forty-six per cent, of the carcinomata.

The size of the growth in the small intestine cannot be relied on as an accurate index of the probable lymphatic involvement; neither can the history or duration of symptoms indicate the extent of metastasis. Metastatic involvement of the lymph glands can be definitely determined only by systematic microscopic study of all regional lymph nodes. The size of the lymph node or the number of palpable glands has been proved not to be an index to the amount of involvement. The microscopic study of the associated glands in this series has been of further diagnostic value in determining the type of malignancy, especially in the cases which were secondary to malignancy elsewhere in the body. Adenocarcinoma is present in all primary carcinomata of the small intestine, but the possibility of the growth being secondary must be kept in mind.

Malignancy of the small intestine may simulate the primary type, and on microscopic examination prove to be secondary, as is illustrated by the cases of melanoepithelioma and squamous cell epithelioma, as well as by ovarian and uterine malignancies. Therefore, it is only by systematic microscopic examination that it is possible to rule out local metastasis in cases of carcinoma of the small intestine. A further important object of microscopic study is the determination of the type of malignancy, which is an index as to the primary or secondary nature of the growth, and, as such, assists in the prognostication.

Permanent Cures Following Operations for Cancer.—Alexander Fraenkel (*Wiener klinische Wochenschrift,* January 31, 1924), recalls that there are two factors which interfere with permanent cures following operations of cancer, namely: 1. Perforation into the blood stream, which may occur very early in the course of the cancer, thereby producing matastases. 2. Lymph node metastasis, which is not controllable by the operation because it lies beyond the field of operation or because it may entail dangerous complications. These unfavorable occurrences do not, however, invariably take place. Most unexpectedly and very frequently there is a dissemination of cancer cells into the lesser pulmonary circulation, but only a small part of these disseminated cells produce metastatic tumors or break through the arterial walls into the perivascular lymph spaces. Most of them are either destroyed or encapsulated and made harmless in spite of their capacity for growth through the organization of their thrombotic covering. Some of them, naturally, permeate the surrounding connective tissue thrombus into the capillaries and pulmonary venules and thus give rise to the formation of secondary tumors in the region of the greater circulation. All this may go on without the lungs showing any macroscopic changes. The organism can, even though not in every case, but in a considerable number, become the master of the situation; where this fails the operative results are nil.

Carcinoma of the Duodenum. — D. M. Vickers (*Annals of Surgery,* February, 1924) sums up his study as follows:

Carcinoma of the duodenum is clinically unusual and is found in 0.033 to 0.09 per cent. of hospital autopsies. Carcinoma is most frequent in the second, descending or periampullary portion. Next in order of frequency is the first portion, and last is the third or juxtajejunal portion. There are no significant facts in its site, age, distribution, preceding symptomatology to suggest an etiology, other than those of neoplasms elsewhere. Symptoms follow from obstruction of the ducts in periampullary cancer and from obstruction of the lumen of the gut in the infraampullary or supraampullary growths. Treatment is primarily surgical and usually palliative. Results in general are unsatisfactory.

Carcinoma of the Breast.—H. A. Kelly and R. E. Frick (*Surgery, Gynecology and Obstetrics,* March, 1924), encouraged by the results obtained from five hundred and fifty cases treated by operation and radium, present the following conclusions: Aggressive radium therapy complementary to surgery offers the best prognosis when dealing with malignancy of the breast. The technic of x ray treatment has been difficult but is improving from year to year, just as surgical methods have progressed in the past. Results as yet are not brilliant, as the radiologist is apt to be used as the final court of appeal called in the most hopeless cases, often where every other line has failed and only too often where unscrupulous methods have deprived the patient of all possible hope of relief from suffering.

Gumma of the Breast.—F. E. Adair (*Annals of Surgery,* January, 1924) aims to emphasize the diagnostic points which differentiate gumma of the breast from carcinoma and other malignant growths. He states, in effect, that the great importance of the gumma lies in the fact that during the first three or four periods it so simulates carcinoma of the breast that it is difficult to distinguish, and only with the most minute consideration will it be possible to do so before the tumor has reached the fourth period. After this stage the diagnosis is more simple. The fact that a patient has had syphilis must not have too strong a bearing against the diagnosis of carcinoma; for we occasionally see a carcinoma in a luetic subject. Incidentally this group fare much worse than when carcinoma of the breast is not on luetic soil. There are points which gumma and certain types of carcinoma have in common, namely, stony hardness, sharp circumscription, painlessness, and skin involvement. There are some characteristics of gumma usually not found with carcinoma. These are of diagnostic aid: a history of syphilitic infection, miscarriage, etc.; presence of other syphilitic manifestations; bizarre involvement of the lymph nodes; tumor egg shaped; rarely orange peel skin appearance; gumma grows faster than carcinoma; nipple never retracts unless lesion lies very near it; fluctuation is the rule at one stage; tenderness at this stage; at later stage of ulceration the axillary nodes become markedly involved; Wassermann test positive; therapeutic test with salvarsan.

Influence of Lead on Cell Growth.—W. Blair Bell (*Lancet,* February 9, 1924), reports on his laboratory investigations and clinical observations on the effect of lead on tissue growth, particularly on malignant neoplasms. He found that lead is not only much more toxic to the young and preadolescent man than to the adult and old throughout the vertebrate kingdom, but also that the effects produced by the metal are general in the young and local in the adult. The results obtained were sufficiently promising to encourage further investigation even in hopeless cases. Patients with inoperable neoplasms, if in good condition otherwise, should be given a chance by removal of the growth and immediate postoperative treatment to prevent recurrences. Serious radical operations may be avoided if the patient can be given postoperative treatment. This combined form of treatment with intravenous injections of lead and röntgenotherapy subsequently has given some very encouraging results when the tumor was inoperable but accessible. Ionization, followed by röntgenotherapy, may be advisable in some cases. The author is almost certain that the ultimate mode of treatment in malignant disease will be by the blood stream.

Multiplicity of Tumors, Periodical Growth and Tumor Formation.—E. Hedinger (*Schweizerische medizinische Wochenschrift,* November 1, 1923), states that in a large autopsy material one not rarely finds individuals with several, multiple and different tumors, some of which are benign and some malignant, so that one unquestionably gains the impression that there are individuals with a definite predisposition to tumor formation, in whom a basic differentiation between benign and malignant tumors must not be made. It is still undecided whether this predisposition to tumor formation is familial and hereditary. In view of the significance of malformations in tumor formation and in consideration of the well established fact that malformations are hereditary in principle, a possibility of the predisposition to tumors is more than likely. Individuals, who show multiple tumors in association with beginning malignant tumors, especially cancers, and who are at an age just before or at senility, occasionally show pictures of diffuse proliferation of hepatic and possibly liver cells aside from the tumor formation. Even though senility is characterized by some through the gradual impossibility of new cellular formation, nevertheless some of the biological and morphological conceptions (increased formation of hair, etc.) are in favor of the possibility of a periodical or rhythmical growth even at a later period of life. The proliferations in the liver and kidney, to which might also be added other parenchymatous proliferations, may possibly be viewed in this sense. A definite decision in this matter is impossible because we know too little about the physiological period growth of the metazoa, and particularly of man. Therefore the possibility must be admitted, that the process may not be physiological and periodical, but rather a diffuse pathological growth. At any rate, the occurrence of multiple tumors, namely, in combination with beginning malignant tumors, especially carcinomata, is associated with a tendency toward diffuse growth in one or even different organs. In this way the circumscribed growth of tumors becomes a partial phenomenon of a diffuse, periodical, physiological or even pathological growth.

Prognosis in Giant Cell Sarcoma.—W. B. Coley (*Annals of Surgery,* March, 1924), presents a series of fifty cases, and basing his findings on the end results, offers the following conclusions: Concerning treatment, the author strongly disapproves of the present tendency to forego exploratory operation in tumors of the long bones, and believes that the disadvantages of this procedure have been unduly emphasized by the pathologists, thereby making the surgeons less and less inclined to avail themselves of this most important aid in diagnosis. The greatest objection to exploratory operation is the supposed danger of causing generalization of the disease from cutting into the tumor. That this danger is largely theoretical is shown by the fact that the great majority of cases of sarcoma of the bones that have been cured were cases in which exploratory operation had been performed. Another disadvantage which is claimed for it is the possibility of infection occurring in the exploratory incision. Infection in modern surgical technic should be a rare occurrence. Without an exploratory operation, it is impossible to make an accurate diagnosis in a considerable number of cases; and unless an accurate diagnosis is made, the proper method of treatment cannot be employed sufficiently early to save the life or limb. In the giant cell group of longbone tumors, the author says he would never do a simple exploration, but would perform a thorough curettage as soon as possible.

It is assumed that no bad results will follow the use of radium or x ray in the treatment of longbone sarcoma; and yet there is good reason to believe that if a careful follow-up of all the cases treated by x ray or radium could be obtained, untoward results would be found quite as serious as those that have been observed following curettage. Recently the author amputated the thigh in the case of a benign giant cell sarcoma of the lower end of the femur in an adult, who had originally been treated at another hospital by x ray after curettage and carbolic acid had been applied. In the author's opinion, at the present time there have been no results in the treatment of giant cell sarcoma to justify the substitution of radium or x ray as a method of choice, for curettage supplemented by prophylactic toxins and radium or x ray. A considerable number of permanent cures have been obtained by the latter method, which method has the advantage of greatly shortening the period of treatment and the consequent disability.

The author believes that Bloodgood's latest statistics furnish convincing evidence of the efficacy of the plan of treatment which he advocates, i.e., immediate and thorough curettage; washing out the cavity with carbolic acid, alcohol and zinc chloride (fifty per cent. solution); and if the frozen section shows any evidence of sarcoma, introducing radium needles at the time of operation, leaving the wound open for subsequent study of the tissue filling up the cavity, and for further treatment if necessary. The introduction of radium needles the author believes is unnecessary and prone to lead to infection.

While the author completely agrees with Bloodgood on the method of conservative treatment of central tumors of the long bones, he is even more conservative in that he not only abandons the use of amputation in these cases, but resection as well in a certain group which are clinically and microscopically benign. Furthermore, his series shows that the considerable portion of bone that has been destroyed can be entirely repaired by nature, with restoration of function, without any bone graft. In additon to curettage and escharotics, he believes it advantageous to use the mixed toxins of erysipelas and bacillus prodigiosus, and radium pack, if available, but not until the cavity has nearly closed, thereby greatly decreasing the number of recurrences and hastening the recovery of the patients.

Prognosis in Giant Cell Sarcoma.—W. B. Coley (*Annals of Surgery,* April, 1924), presents the following more detailed conclusions of his work as a whole:

In view of the cases reported by the author, it would seem necessary to modify the opinion so strongly held today by most of the leading pathologists that giant cell sarcoma is always benign and never gives rise to metastases. As far as the author can see, there is only one explanation of these cases which still leaves it possible for one to entertain the theory that giant cell tumors are always benign; and that is, to assume that all of the cases reported by the author, in which metastases developed ending in death, were wrongly diagnosed. It is quite clear that such explanation concedes the whole position. As a matter of fact, however, in the author's personal series of cases, the diagnosis of benign giant cell sarcoma was made not only by competent pathologists, but in many cases by the very pathologists who had made a most careful study of bone tumors; so that if men of such wide experience are unable to differentiate the benign from the malignant type until death from metastases occurs, how much less likely is it that pathologists of ordinary experience will be able to make such differentiation? It must be admitted that the treatment of giant cell sarcoma of the long bones, by radium or x ray, is at present in an experimental stage, and the results thus far obtained do not warrant our giving up the standard method of surgical treatment (curettage) with or without the subsequent use of radium or toxins.

The end results following the different methods of treatment would seem to jusfy us in regarding the best method of treatment of these giant cell tumors as follows: Exploratory operation with curettage of all the tumor that it is possible to remove; swabbing out the cavity with pure carbolic acid and alcohol or zinc chloride; packing the cavity firmly with gauze to control hemorrhage; putting up the limb in a circular plaster of Paris cast if there is any danger of pathological fracture; keeping the cavity clean with Dakin's solution; systemic treatment with the mixed toxins of erysipelas and bacillus prodigiosus for a period of three or four months supplemented with at least one massive dose of radium in the form of a pack, for instance, 12,000 mc. hours at ten cm. distance over three areas, if available, if not, x ray may be used; if the disease recurs in spite of curettage and prophylactic treatment, a second, or even a third curettage may be employed, combined with further use of either toxins or radium; if at the end of six months the disease is still progressing, resection or amputation may be indicated; primary amputation should rarely be performed in any type of central giant cell sarcoma without a prolonged preliminary trial of conservative treatment; clinical evidence of malignancy; rapid growth, breaking through the bony shell should outweigh the histological evidence of a benign giant cell tumor, and in cases of this type, amputation should be performed after a brief trial of conservative treatment, if the disease is not controlled.

Studies Based on Malignant Tumor of the Rabbit.—Wade H. Brown and Louise Pearce (*Journal of Experimental Medicine,* May, 1923) have studied a highly malignant tumor occurring in a rabbit infected with syphilis, in order to determine whether any essential connection could be established between syphilitic infection and the occurrence of malignant growths. The tumor has been successfully transplanted, and is in its twentieth generation. No explanation of the origin of the tumor is put forth, but the history of the growth stamps it as a typical instance of the development of a malignant tumor upon the basis of a chronic inflammatory lesion, in which a syphilitic infecton may have played the part of a predisposing or of an exciting factor. The growth apparently began as a process of a typical epithelial proliferation, such as is common to chronic inflammatory lesions of the skin, and probably differed in no essential respect from the proliferative changes present in neighboring parts of the skin or from those which subsequently developed in the mucous membranes of the mouth and esophagus. The conclusion is reached that the growth in the scrotum represented a neoplasm of epithelial origin which was composed of cells allied to those found in the bulb and root sheath of the hair. The evidence presented is sufficient to warrant the assumption that the factor of foremost importance in the development of the tumor was constitutional rather than local.

In a study of primary transplantation and elimination of a coexisting syphilitic infection the authors found that it was possible to transplant a spontaneous malignant tumor occurring in a syphilitic rabbit by the use of intratesticular inoculation in practically all animals used. In order to eliminate any possible syphilitic infection which might be transmitted along with the tumor, arsphenamine was used. The transplanted tumor showed a high degree of malignancy in the first and second generation, and it appeared that more than fifty per cent. of the animals might be expected to succumb to the effects of the tumor growth within six or seven months.

The Influence of Nourishment on the Growth of Mouse Carcinoma.—F. Ludwig (*Schweizerische medizinische Wochenschrift,* March 6, 1924) was enabled to show that foods poor in vitamines affect the growth of carcinoma and in this way he hopes to explain the etiology of carcinoma. The striking observation that the development of cancer can be inhibited by a lack of accessory food stuffs appears to the author to be sufficient evidence that, in addition to their stimulating effect, these vitamines also play a very important part and that the development or nondevelopment of a carcinoma depends most of all upon the behavior of the vitamines. If these are missing or present in insufficient amount, a stimulating action will not suffice to cause the development of carcinoma. But if there are sufficient vitamines present, any suitable stimulating action will probably produce the development of a carcinoma. It is most probable that the growth promoting factors are responsible, as they are found in all the vitamines, and they seem to be most active in the increased cell division and cell reproduction. The author thus desires to show that the kind of food exerts an immediate effect upon the development of carcinoma. On the basis of this theory new avenues of prophylaxis and of therapy may be brought to light.

Ventral Tumors of the Sacrum.—H. W. Hundling (*Surgery, Gynecology and Obstetrics,* April, 1924), summarizes his findings on various case reports as follows:

Ventral tumors of the sacrum (socalled Middeldorpf tumors) are definitely encapsulated, are usually attached to the periosteum, and tend to erode the bone. The greatest pressure is exerted on the neural and not on the rectal side. Remains of the lower neural canal and the postanal gut appear to form the basis for many of the ventral tumors. There is great diversity of tissue in these growths; all the body tissues may be represented. Opinion seems about equally divided with regard to the monogerminal and bigerminal theories of origin of these tumors. Ventral tumors of the sacrum seldom metastasize, but cause death by infiltration. The blood picture is practically always normal, and the urine rarely shows unusual changes. Systemic reaction of the tumors is mild. Pain, resembling sciatica, and constipation are often the only symptoms. The röntgen ray findings are practically always negative. Treatment consists of the removal or scraping out of the tumor, followed by extensive radium radiation.

Malignant Tumors of the Thyroid.—W. P. Herbst (*Annals of Surgery,* April, 1924) offers the following conclusions:

1. The degree of malignancy in the lesions of the thyroid is according to the order in which they are mentioned: sarcoma, carcinoma, malignant adenoma, and malignant papilloma, sarcoma being the most malignant and papilloma the least.

2. By far the best results are obtained in the cases in which operation is performed before the malignancy has infiltrated the capsule, and this group of cases is the one in which the clinical diagnosis of malignancy is rarely made.

3. Occasional unexpected happy results occur in cases of malignant papilloma found practically inoperable at the time of operation, but in which radical removal of infiltrating growths, and even of glands infected by metastasis, has been practised.

4. There is no grave contraindication to total extirpation, so far as myxedema is concerned, in cases in which all tissue infected by malignancy may be removed.

5. X ray and radium therapy have not been used long enough nor on a sufficiently large number of patients to estimate their true worth.

6. Metastasis to bone is rare in this group of malignancies of the thyroid. The lungs and liver in the order named are the most common sites of distant metastasis.

7. The possibility of malignancy is too rarely thought of in adenomatous tumors of the thyroid in patients of the fifth decade, and this possibility is not used often enough as an argument to urge operative treatment for these patients.

8. A careful followup system should be used in all cases of questionable malignancy, and persisted in for at least ten years before the case is considered benign.

Hippocratic Fingers.—David Campbell (*British Medical Journal,* January 26, 1924), reports a case showing the usual features of hypertrophic osteoarthropathy due to a malignancy (endothelioma) in the left lung. The finger tips became markedly swollen and during a period of four weeks the swelling receded considerably, after which time the swelling returned. The primary pathological finding in all cases of clubbed fingers is edema of the tissues, especially in those lying between the nail and the bone. The author believes that the clubbing of the fingers is due to defective oxidation in the tissues of the extremities, whether produced mechanically by obstruction to the venous return, or by a general lowering of the oxygen tension of the blood in parts of the body where the circulation is retarded.

DIABETES

Diabetes Insipidus and Polyuria.—C. E. DeM. Sajous (*American Journal of the Medical Sciences,* May, 1924), says that Swale Vincent's conclusion that the prevailing attitude concerning the functions of the hypophysis should be reconsidered, in view of the labors of Camus and Roussy, Bailey and Remer, Houssay and others, being fully justified, the line of research which he has reviewed is intended to point out:

1. That it is because the functions attributed to the posterior lobe of the hypophysis by physiologists and others have been erroneous from the start that Swale Vincent's conclusion that the attitude in relation to this organ should be reconsidered now imposes itself.

2. That the investigations of Camus and Roussy and others named do not demonstrate that the posterior lobe of the hypophysis takes no part in the pathogenesis of diabetes insipidus or polyuria; they only show that lesions of the tuber cinereum can provoke these disorders, and that the latter can be produced without the participation or need of a secretion from the hypophysis.

3. That the effects of lesions upon, the slightest contact with, or manipulation of, the posterior lobe; its embryological origin as a neural organ; its histological and chemical similarity to the cerebral cortex; the various disorders which may be strictly localized in it; its autonomous role with the overlying tuber cinereum as shown by decerebrated animals, and other facts submitted, point to this hypophyseobasal area, the name herein suggested for it, as the central starting point of a nerve path which then de-

scends by way of the bulb, the cord and the splanchnic nerves to the kidneys.

4. That the experimental data recorded by Camus and Roussy and others are accounted for by the inhibition or arrest, as a result of lesions practised by them or the pathological sequels of such lesions in the tuber cinereum, of the physiological impulses through the hypophyseorenal path to the vessels of the kidneys, thus causing passive dilation of these vessels, abnormal excitation of the renal cells by the excess of arterial blood thus permitted to reach them and as end result, polyuria or diabetes insipidus.

5. That the beneficial effects of posterior pituitary preparations are accounted for, not by a supposed secretion or hormone in these products, since the actual existence of such a secretion as a physiological entity has never been demonstrated and is controverted by many facts, but by the recognized pharmacological property of these preparations of causing constriction of the arterioles, thus counteracting in the kidneys the dilation of these vessels, which dilation is the cause of diabetes insipidus and polyuria insofar as their relationship with the hypophyseorenal nerve path—a term I would also submit as appropriate—is concerned.

Insulin Treatment.—Leo Pollak (*Wiener klinische Wochenschrift*, January 17, 1924), gives the following indications for the use of insulin: 1. Coma and those precomatous conditions, in which transient results are obtained with sodium bicarbonate; 2. in surgical complications; 3. refractory cases. If some success is achieved with a diet of restricted albumin, there is a relative indication for insulin and the latter need be given only intermittently. The restricted diet of albumin must not be given over too long a period of time as the albumin is indispensable for reparatory purposes. The insulin treatment should be carried out under a continuous control of the urine and the blood sugar. In light cases, if no more than twenty grams of sugar is excreted each day, control of the urine alone is sufficient, so that the patient need not be confined in a sanatorium.

Studies on Diabetes.—In *Endocrinology*, March, 1924, Karl Petren summarizes the contents of his recent book. Even in severe diabetes the nitrogen metabolism is not higher than in health. The necessary condition for reaching the lowest nitrogen metabolism consists in a sufficient caloric intake. In Petren's experience a fat intake up to three hundred grams does not have an unfavorable influence on acidosis, but the deciding factor in the acidosis of severe diabetes is the increased nitrogen metabolism. Fasting days diminish acidosis by lowering nitrogen metabolism, and the same holds for "pure fat days." If the blood sugar threshold, past which glycosuria sets in, decreases during treatment, this has a prognostically unfavorable significance. The author compares the effects obtained by his dietetic method with those of Joslin and Allen and thinks his own results better from a symptomatic point of view. Analysis shows that in a large proportion of subjects an increase of the incretory function of the pancreas set in during the dietetic treatment.

Letters to the Editor.

IVY POISONING—A REMEDY

PHILADELPHIA, *June 18, 1924.*

To the Editor:

Allow me to express my appreciation of the valuable data presented by the Symposium on Dermatology which appeared in the MEDICAL JOURNAL AND RECORD June 4, 1924, especially that portion relating to ivy poisoning.

Will it be asking too much to make a record of an entirely new treatment for the latter malady? For the past fifteen or twenty years I have used exclusively sulphur iodide internally with a saturated solution of epsom salt locally with uniformly satisfactory results.

I have tablet triturates of sulphur iodide which contain one fiftieth grain each, the tablets being one half grain size. The dose is five tablets dissolved in the mouth at intervals of two hours during the first day and at less frequent intervals on the second and possibly the third day, depending upon the serious nature of the invasion. Usually the local irritation and nervous excitement subsides after the first dose and there are no recurring untoward symptoms. That is, relief is afforded *cito, tuto et jucunde.*

Precisely the same treatment is efficacious for beestings. Last fall one of my neighbors stepped up on the porch, as I supposed for a social call, but being seated he said he wished to consult me professionally. It seems a hornet had stung him on the crown a few minutes before and caused rather alarming symptoms—the effect upon the nervous system was felt even in the fingers and toes. Fortunately, I had some of the tablets in the house and had him take five at once, after which he sat down and we talked on various subjects; about ten minutes later when I asked him how he felt he said all the unfavorable symptoms had disappeared. Several days later he told me that he took the prescribed three doses at half hour intervals and when he woke up the next morning all the disagreeable symptoms had subsided and there were no aftereffects.

The physiological basis of this treatment is not difficult to understand—the sulphur iodide neutralizes the poison in the blood stream, while the local application of the epsom salt solution enacts the rôle of an analgesic.

JOHN AULDE, M.D.

A DIAGNOSTIC POINT

NEW YORK, *June 18, 1924.*

To the Editor:

In their interesting and timely article in your current issue entitled Vasovesiculitis Simulating Acute Appendicitis, U. G. Dailey and W. S. Grant were kind enough to pay me the compliment to quote from a recent article of mine on Seminal Vesiculitis, to the effect that I had overlooked "this important diagnostic snag," that is, the possibility of mistaking an acute seminal vesiculitis for an acute appendicitis.

In the article they referred to, I did not discuss the question of differential diagnosis, hence did not mention the point which these authors so strikingly emphasize in their article. However, a more painstaking search of the literature would have shown that in my little book on *Gonorrhea in the Male*, published in 1911, referring to this diagnostic point (page 74) I wrote: "Occasionally cases are seen in which the symptoms are so grave as to suggest the existence of peritonitis or a perforating acute appendicitis."

Again in 1917, writing on the same subject in the last edition of Wood's *Reference Handbook of the Medical Sciences*, page 442, in referring to this diagnostic point, I used the words quoted above.

The point referred to by Dailey and Grant is an extremely important one, and always should be borne in mind before deciding on surgical intervention in cases of supposed appendicitis, particularly in young males.

ABR. L. WOLBARST, M.D.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

GREGORY STRAGNELL, M. D., *Editor*

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, JULY 16, 1924

Medicolegal Notes.

MALPRACTICE ACTION—INSUFFICIENT EVIDENCE OF NEGLIGENCE

In a malpractice action the testimony showed that the plaintiff received a lacerated wound on the forehead, extending through the periosteum to the skull, about two inches long and one quarter inch wide. The defendant examined, cleaned and treated the wound. A trained nurse assisted him, sterilized the instruments used, and was present when he painted the wound inside and outside with tincture of iodine. The wound was open to the skull bone, and the interior for the full length of the cut was plainly visible, and neither the doctor nor the nurse discovered any foreign substance therein. The doctor saturated the wound with antiseptic, stitched it, and dressed it with sterilized gauze, which was held in place by the use of adhesive strips. Thereafter the plaintiff visited the hospital at irregular intervals for three or four weeks. He applied for treatment two or three days after the wound was stitched and dressed. On the occasion of this visit the defendant was not at the hospital. The nurse put fresh sterilized gauze over the wound and requested the plaintiff to call the following day. Plaintiff did not do so, but three or four days later he again applied for treatment. The defendant, at this time, partially removed the stitches, drained the wound, and redressed it.

Two or three weeks later the plaintiff consulted another doctor. The doctor removed the stitches, probed the wound, and found some foreign substance therein. This foreign substance was about the size of a person's little finger nail. The doctor did not know what it was, but after he removed it, cleansed, restitched and dressed the wound, the plaintiff experienced no further trouble from it.

The Louisiana Supreme Court held, Gouner vs. Brosnan, 98 So. 681, that the burden was upon the plaintiff to establish by a fair preponderance of the evidence the allegations of his petition charging the defendant with "negligence, carelessness, want of skill and malpractice" in the methods he employed and the manner in which he treated the plaintiff's wound.

There was conflicting testimony as to the dates, the number of times the wound was dressed, etc., but the outstanding fact which was established beyond dispute, by the testimony of all the doctors who appeared as witnesses, was that the wound was treated by the defendant in the manner most thoroughly approved and followed by the medical profession generally. This testimony was held destructive of plaintiff's contention.

Where there is conflicting testimony, the conclusions of the trial judge, who saw and heard the witnesses, are entitled to great weight, and will not be disturbed unless manifestly erroneous. For these reasons, judgment for the defendant was affirmed.

CHIROPRACTOR MUST HAVE MEDICAL CERTIFICATE TO PRACTISE IN ALABAMA

The Alabama Court of Appeals holds, Fason vs. State, 98 So. 702, in a prosecution for treating human diseases without a license, in violation of section 7564, Ala. Code 1907, that one need not be a "medical" doctor, or one who prescribes drugs or medicines for human diseases, in order to be amenable to this statute against "practising medicine without license." A certificate of qualification from the state board of medical examination is required before one may hold himself out to the public to treat diseases of human beings by any system whatever. A person practising chiropractic must have such certificate, and failing to obtain it he is guilty of violation of the law.

But an affidavit describing the system employed by defendant as "chiropractic or some other system" was held to be indefinite and uncerfain. While the statute mentions "any system" and the system need not be described, yet where a system is named, and in addition thereto "or some other system" is averred, it should be named or the affidavit should aver that it was unknown to affiant. The affidavit was held demurrable for not naming the other system relied on or averring that it was unknown.

In another case in the same court, McClosky v. State, 98 So. 706, it is held that the chiropractor is not excluded or discriminated against by the Alabama statute. He has the same right to apply for a certificate of qualification as does the homeopath or osteopath, and, if granted a certificate by the state board of medical examiners, there is nothing in the law that denies him the right to pursue his method of treatment.

In a prosecution under the statute, the state is not required to prove that the defendant had not obtained the necessary certificate. The defendant must show affirmatively that he had such a certificate.

EMPLOYER'S AGREEMENT TO PAY HOSPITAL FOR EMPLOYEE'S TREATMENT

In a suit by a hospital against the director general of railroads and a railroad for services rendered a railroad employee prior to the period of federal control of the railroads, the Mississippi Supreme Court holds, Vicksburg Infirmary v. Hines, 98 So. 520, that where an employee of a railroad company is received in a hospital for medical treatment, and continued services are rendered to such employee at the special request of an authorized agent of the railroad company, and upon the promise that the company would pay for the services already rendered, as well as future services, and there is no evidence that the bill for such services was charged originally to the employee, such promise or agreement is an original one, having a consideration, and it is not void under the statute of frauds. But the director general was not liable for services rendered the employee prior to the time the President took control of the railroad pursuant to his proclamation of December 26, 1917. Judgment for defendants was therefore affirmed as to the director general and reversed as to the railroad company.

THE USE OF OPIUM AS IMPAIRING THE CREDIBILITY OF A WITNESS

The Alabama Supreme Court holds, Standard Oil Co. v. Carter, 98 So. 575, that the use of opium cannot be introduced to impair the credit of a witness unless it is shown that he was under the influence of the drug at the time of testifying or at the time of the occurrence of the event to which he is testifying, or that his mind was generally impaired by the use of said drug. And in a personal injury case it was held not error to exclude a question to a medical witness as to whether plaintiff had not for many years prior to the injury and subsequent thereto been an "opium habitué," where the question was not followed up by a statement or assurance that defendant expected to show that the habit was so excessive as to impair the memory of the plaintiff.

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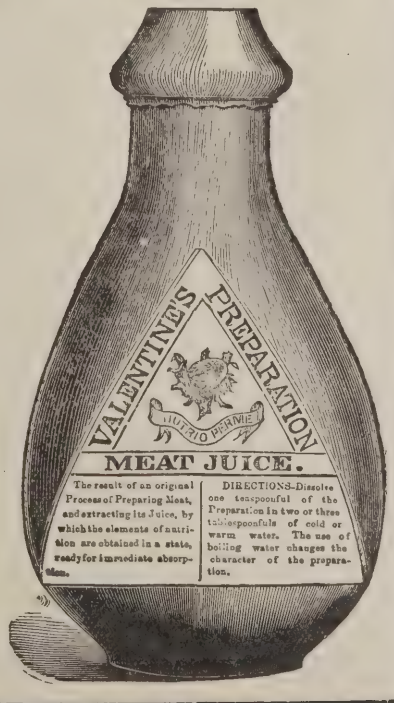
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Miscellany.

Action of Certain Drugs on the Nervous System.—Why and how drugs select special parts of the nervous system for their action is the aim of an investigation under way at New York University by Prof. R. R. Renshaw according to the American Chemical Society. Different drugs, such as nicotine, strychnine, and morphine, act on particular kinds of nerves in particular ways, it is said, but no fundamental evidence has been produced to explain this selective action. Professor Renshaw, the society's statement discloses, has been working on this complex problem, a successful solution of which, it is believed, will lead to the conquest of many diseases of the nervous system which now baffle the medical profession.

It has long been known that much simpler chemical compounds than these drugs have actions on the nerves which for the purposes of research are quite similar. For instance, the action of nicotine on the nerves can be duplicated to some extent with compounds which are simple derivatives of ammonia (tetramethyl ammonium iodide) and are thus far simpler than the ordinary alkaloids. However, Professor Renshaw's research so far has led to the realization that there is much research of a fundamental character in the sciences of physics and chemistry as well as physiology which must be done before any successful outcome may be expected from the major research. For instance, the method by which nervous impulses are transmitted through the nerve fibres is still a complete mystery, although many theories have been advanced. It is impossible to say whether the transmission of a nervous impulse to the brain takes place by a chemical process or a physical one or whether it is an electrical problem, a chemical problem, or a problem involving surface tension.

Discussing the basis for the selective action of drugs on the nervous system, Professor Renshaw made a strong appeal for coordinated, cooperative research. He said:

"The mechanics concerned are extremely complicated and include intricate processes of several fundamental sciences. Unfortunately many physical and chemical phenomena involved are imperfectly understood, and until more information is available in certain fundamentals of these sciences it seems hopeless to expect an adequate explanation of the conduction of the nervous impulse, of the action of drugs, etc. Without such an explanation we have neither a rational basis for curing a large class of diseases nor have we the foundation from which we can systematically develop new curative agents.

"In my judgment a measurable proportion of the funds contributed each year for the advancement of human welfare should be made available for work on the fundamental problems in physiology, physics and chemistry. Too often funds are so restricted that they may not be used to investigate a phenomenon, that may possibly lie back at the beginning of a chain of physiological events the most obvious effect of which is health or disease. Two examples will make my point plain. Recently we prepared a new substance as a possible curative agent for a certain disease. On examination it was found that animals affected with this malady were amazingly sensitive to this material so that very minute quantities caused death. On the other hand normal animals were comparatively insensitive. They could withstand over ten times the amount of material that the infected animal could.

"A more extraordinary situation is shown in a remarkable discovery by Dr. Reid Hunt, of Harvard Medical School. Hunt found that animals fed on a diet of some of the ordinary foodstuffs that we eat daily could have their resistance to a certain chemical, acetonitrile, changed forty fold by feeding them on a different diet but yet made up of our ordinary daily food materials.

"Think of changing one's resistance to a poison from one measure to forty measures by making only such changes in food that any of us might make at any time! Yet, you would have great difficulty getting money to investigate the toxicity of this chemical by which no one is in any danger of being poisoned. Still in my judgment the successful solution of this problem would have the most far reaching effect on human welfare.

"For that matter no one knows what the toxic substances are which are given off to the body fluids by the bacteria of disease. But every student of medicine is familiar with cases of similarity between the action of chemicals and of the toxins as for example the resemblance between the actions of strychnine and tetanus toxin."

Emerods, Mice, and the Plague of I Samuel, Chapter VI.—Dr. D. Fraser Harris (*Annals of Medical History*, December, 1921), says that the Bible verse in question reads: "Wherefore ye shall make images of your emerods and images of your mice that mar the land." The priests and soothsayers of the Philistines recommended this in an attempt to stay a plague that seemed to have some connection with the presence of the Ark of the Lord, which, although it was transferred to many different places, was always attended by various disasters, among them, an epidemic of malignant tumors, and a plague of vast numbers of mice. In a collection at Jaffa is a roughly shaped image of a mouse cut from a piece of white metal, which is considered as perhaps an *ex voto* of the same kind as that referred to in the Hebrew text. The recent knowledge of the etiology of bubonic plague has furnished a possible clue to the significance of these golden mice of the Scriptures; that is, we now know that the bubonic plague, so prevalent in India, is due to the presence in the blood of the Bacillus pestis, and that the usual method of infection is, in the case of man, the bite of a flea from a plague stricken rodent. One of the characteristics of the disease is the development of buboes or tumors. "It it very remarkable," writes the author, "that the priests should have recommended placing in the Ark not only five golden emerods but also five golden mice. The word emerod is a variant of hemorrhoid and seems to be used in this and certain other passages where plagues are mentioned as the synonym of tumor. . . . The interest attached to the emerods in the Ark is, then, that we may take it as exceedingly probable that the plague of I Samuel, VI., 5, was bubonic plague. But a still higher interest still belongs to the five golden mice for they seem to point to some suspected connection between the diseased lower animals and the plague infected people. . . . If they did suspect the connection . . . they anticipated scientific truth by more than two thousand years."

An article in the *Oxford Dictionary* remarks: "The mice and emerods of gold were essentially charms." The writer of this article adds: "It is perfectly possible that the images in the Ark were intended as charms of two different kinds, the emerods against the human plague, and the mice against the overrunning of the land by the vermin. It is certainly exceedingly striking to find the tumors and the rodents associated at so remote a date. . . . 'No rats, no plague,' is an old saying in India."

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British Scientists to Meet in Toronto.—Preparations are going rapidly forward for the August meeting in Toronto of the British Association for the Advancement of Science, which will be one of the most notable gatherings of English speaking scientists ever convened on the American continent. More than four hundred British scientists and many scientists from the United States and other countries will attend. Among these will be many whose lives and works are world famous. The retiring president, Sir Ernest Rutherford, who did much of the pioneer work on radioactivity, will turn over his office to Major General Sir David Bruce, chairman of the governing body of the Lister Institute, famous for his work on malta fever and sleeping sickness.

Lord Rayleigh will deliver an address on The Scattering of Light. If the World Went Dry is the somewhat startling title of a paper to be delivered by Sir Napier Shaw. The title is presumably to be interpreted in a strictly literal sense, since Sir Napier is a distinguished meteorologist and president of the International Meteorological Committee. Another topic of popular interest will be The Sense of Humor in Children, which will be discussed by Dr. C. W. Kimmins, chief inspector of the educational department of the London County Council.

Popular lectures for children will be a feature of the meeting, three of them being on the program. A series of evening lectures of popular appeal will also be given by some of the distinguished scientists. The regular program will consist of a large number of technical papers to be delivered before the appropriate sections of the association. Some of these papers are expected to disclose new advances in science of the utmost importance.

The inaugural general meeting will take place in the convocation hall of the University of Toronto on Wednesday, August 6th, at which Major General Sir David Bruce will deliver his presidential address on Advances Made in the Knowledge of Disease, with Especial Reference to Methods Developed During the War. The convention will continue through August 13th.

Rural Health Problems.—During 1923 the International Health Board of the Rockefeller Foundation carried on hookworm work in Jamaica, Leeward Islands, Saint Lucia, Trinidad, Porto Rico, Costa Rica, Guatemala, Honduras, Nicaragua, Panama, Salvador, Colombia, Dutch Guiana, Brazil, Australia, Fiji, Siam, Ceylon, India, and Mauritius. An invitation to cooperate with the Government of Mexico was accepted.

Hookworm disease and to a considerable extent malaria and typhoid fever are rural problems. Attempts to control these maladies have disclosed seriously backward health conditions in the American countryside. Typhoid is too often spread by flies, polluted wells, insanitary dairies, and undiscovered carriers. Other communicable diseases are disseminated through the schools. The sanitation of farmhouses and premises is defective. Examinations of rural school children frequently reveal more uncorrected physical defects than are found among town and city pupils. Maternity care and infant hygiene are sadly neglected. Popular knowledge about community health and about personal hygiene, i. e., food, ventilation, and exercise, is meagre and misleading. While the general death rate for the United States has steadily fallen, the decline has been relatively greater for urban than for rural populations. This state of things is not due to causes inherent in rural life but to a failure to extend to the open country the kind of sanitary and health services which have been developed in towns and cities.

The International Health Board has from the beginning of its work had as one aim the merging of specific hookworm measures into general health organizations with the country as the unit. This object was realized first in the South. Later the system spread to other parts of the country until in 1923, 230 counties in 28 states maintained fulltime health staffs. Toward the budgets of 173 of these counties the board contributed. Such aid was in no sense designed permanently to take the place of public funds, but merely to help state and local authorities to prove to communities the value, feasibility, and eventual economy of modern public health work. Similar aid was given for a limited number of rural units in New Brunswick (Canada), Brazil, and Czechoslovakia.

The average county health program includes: inoculation against typhoid, smallpox, and diphtheria; building of sanitary, flyproof latrines; medical inspection of school children, with dental and tonsil clinics; maternity care and infant welfare; control of communicable diseases generally, including special attention to tuberculosis; and education of the community in public and personal hygiene. The typical fulltime staff comprises a health officer, a sanitary inspector, one or more visiting nurses, and an office clerk. Motor transportation is provided. The average total annual cost of such a health service in the counties with which the board is cooperating is $10,000.

Epidemics of Accidents Replace Those of Disease.—Accidental injuries from mechanical devices are rapidly assuming the importance as menaces to life that formerly was taken by epidemic diseases, according to Dr. J. Howard Beard, of the health service headquarters of the University of Illinois, in an address before the American Medical Association. Dr. Beard said:

"An epidemic of injury has succeeded the epidemics of infection. The suicide rate is about that of the whooping cough death rate. Nearly as many people were killed in automobiles at railroad crossings last year as died of scarlet fever in 1920. Fatalities resulting from automobile accidents in 1923 are about the same as those from diphtheria and scarlet fever combined. Accidental deaths in industry are approximately equal to the sum of the deaths due to measles, whooping cough and diphtheria. There are 700,000 persons injured yearly in their occupations, whose disability causes a loss from work of not less than four weeks. Industrial poisoning produces its great quota of disease and death, and in some of the more sanitary cities, the exhaust gas from automobiles causes more deaths than the typhoid bacillus. Intelligent public sentiment, fostered among employers, employees and chauffeurs, as well as in institutions of higher learning, is the only way of coping with the accident disease."

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Brazil's Final Bout With Yellow Fever.—The outstanding feature during 1923 of the systematic, concerted attack upon yellow fever in which the International Health Board of the Rockefeller Foundation has been engaged since 1916 was the decision of the Brazilian Government to undertake a definite campaign to eliminate the disease from the seed beds along the northern coast from Pará to Bahia, where fever still appears from time to time. The Board warmly welcomed the invitation of the Brazilian authorities to have a part in this work. Noguchi, the discoverer of the yellow fever organism, sailed for Brazil in November to make further studies and was soon followed by staff members with equipment and supplies.

This latest, and it is to be hoped final, bout with yellow fever in Brazil recalls the brilliant way in which the capital was freed from yellow fever under the leadership of that distinguished scientist and able administrator, Oswaldo Cruz. Graduated from the University of Rio de Janeiro, for four years a student and investigator at the Pasteur Institute in Paris, he overcame all obstacles and opposition and made Rio de Janeiro safe.

Oswaldo Cruz had watched with eager interest the progress of yellow fever control. Finlay's early (1881) suggestion that the disease is spread by a mosquito, Ross's discovery (1897) that malaria is transmitted in this way, the indisputable proof by the United States Army Commission under Reed in Cuba (1900-1901) that the fever is communicated solely by the bite of the female Stegomyia mosquito, the success of Gorgas in wiping out yellow fever by mosquito control of Havana, in Cuba, and in the Panama Canal Zone, convinced the young Brazilian that the same methods could be successfully applied in his own city of Rio. Appointed Director of Public Health and loyally supported by President Alves, he gradually overcame traditional prejudices, professional opposition, the persistence of antiquated methods, and apprehensive interests of many kinds, until the annual deaths from yellow fever had fallen from 984 in 1902 to 0 in 1909.

Oswaldo Cruz's death in 1917 prevented him from following as he would have done with so much satisfaction the later success of the campaigns organized by the International Health Board; the formation of national yellow fever commissions in Mexico, Central America, and in Northern South America; Noguchi's discovery of the causative organism and his preparation of a vaccine and a serum; the clearing up (1918-1919) of Guayaquil in Ecuador, the chief endemic centre; the exploratory expedition (1920) to the West Coast of Africa to investigate cases reported there; the elimination of the fever from Peru (1921); the quick control of incipient epidemics in Central America; and the active participation of the Mexican Government in the movement until by 1923 it was possible to make a most encouraging report. The situation in 1923 may be summarized as follows: No cases reported from Mexico, Central America, Ecuador, or Peru; outbreak in Colombia promptly put under observation; well organized control measures under way in Northern Brazil and workers in training to resume study and observation along the coasts of West Africa from which cases of yellow fever have been reported.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

HEIRS APPARENT. By Philip Gibbs. New York: George H. Doran Company, 1924. Pp. 375.

THE INTERPRETER'S HOUSE. By Struthers Burt. New York: Charles Scribner's Sons, 1924. Pp. 445.

COUNTRY PEOPLE. By Ruth Suckow. New York: Alfred A. Knopf, 1924. Pp. 213.

AIDS TO MEDICAL DIAGNOSIS. By Arthur Whiting, M.D. New York: William Wood and Company, 1924. Pp. 177.

CARLYLE AND MILL. Mystic and Utilitarian. By Emery Neff. New York: Columbia University Press, 1924. Pp. 334.

HOSPITAL ORGANIZATION AND OPERATION. By Frank E. Chapman. New York: The MacMillan Company, 1924. Pp. 270.

SCIENCE AND ART OF ANESTHESIA. By Colonel William Webster, D.S.O., M.D., C.M. St. Louis: The C. V. Mosby Company, 1924. Pp. 214.

TRANSACTIONS OF AMERICAN PROCTOLOGIC SOCIETY. Twenty-fourth Annual Session, Los Angeles, 1923. New York: Paul B. Hoeber, Inc., 1924. Pp. 89.

CLINICAL ELECTROCARDIOGRAPHY. By Sir Thomas Lewis, M.D., F.R.S., D.Sc., F.R.C.P., C.B.E. Third Edition. London: Shaw and Sons, Ltd., 1924. Pp. 126.

INTERNATIONAL ASSOCIATION OF MEDICAL MUSEUMS AND JOURNAL OF TECHNICAL METHODS, Bulletin No. X. New York: Paul B. Hoeber, Inc., 1924. Pp. 165.

PSYCHOANALYSIS AND AESTHETICS. By Charles Baudouin. Translated from the French by Eden and Cedar Paul. New York: Dodd, Mead and Company, 1924. Pp. 327.

INTERNATIONAL MEDICAL ANNUAL. A Year Book of Treatmen and Practitioners' Index. Forty-second Year, 1924. By various authors. New York: William Wood and Company, 1924. Pp. 556.

THE TREATMENT OF THE COMMON DISORDERS OF DIGESTION. A Handbook for Physicians and Students. By John L. Kantor, Ph.D., M.D. Illustrated. St. Louis: The C. V. Mosby Company, 1924. Pp. 245.

INSULIN IN GENERAL PRACTICE. A Concise Clinical Guide for Practitioners. By A. Clarke Begg, O.B.E., M.D., Ch.B. (Edin.), M.B. (Lond.). London: Wm. Heinemann Medical Books, Ltd., 1924. Pp. 130.

DIABETES. A Handbook for Physicians and Their Patients. By Philip Horowitz, M.D. With thirty-four text illustrations and two colored plates. Second edition, revised and enlarged. New York: Paul B. Hoeber, Inc., 1924. Pp. 219.

BAILLIÉRE'S POPULAR ATLAS OF THE ANATOMY AND PHYSIOLOGY OF THE MALE HUMAN BODY. By Hubert E. J. Biss, M.A., M.D., Cantab., D.P.H. Third Edition. Plates by Georges M. Dupuy, M. D. New York: William Wood and Company, 1924.

PATHOLOGICAL TECHNIQUE. Practical Manual for Workers in Pathological Histology and Bacteriology, including directions for performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By Frank B. Mallory, M.D., and James B. Wright, M.D. Eighth Edition. 180 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 660.

THE HUMAN TESTIS. Its Gross Anatomy, Histology, Physiology, Pathology, with Particular Reference to its Endocrinology, Aberrations of Function and Correlation with Other Endocrines, as well as the Treatment of Diseases of the Testes and Studies in Testicular Transplantation and the Effects of the Testicular Secretions on the Organism. By Max Thorek, M.D. 308 Illustrations. Philadelphia and London: J. B. Lippincott Company, 1924. Pp. 548.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 3 NEW YORK, WEDNESDAY, AUGUST 6, 1924 WHOLE No. 2286

Radium Therapy in Gynecology*

P. BROOKE BLAND, M.D.,

Philadelphia, Pa.

We have been using radium in the common gynecological lesions for approximately nine years. Our first application was made for carcinoma of the uterus. This was administered on January 6, 1915. Since that period we have employed radium more or less constantly. We have not used it to the extent of some of our contemporaries in Philadelphia, but quite enough, I think, to present a comprehensive view of its value in the specialty in which I work, gynecology. I may add further that in certain instances we have found it to act with noteworthy success, while in others it has as notably failed. Hence, like most of the resources at our command, it cannot be regarded as a specific for the various conditions arising in the uterus or its appendages; although one must admit as a therapeutic measure in certain conditions it occupies first rank.

In uterine cancer, for example, so far as successful therapy is concerned, it is the equal of surgery, or, indeed, even more than equal; first, because the results as regards palliation and socalled cure are best served by this element, and second, because it does not entail any special risk or mortality; factors which always must be considered in operative therapeutics.

Radium, like surgery, often is associated with phenomena which one cannot fathom. It sometimes succeeds in cases presenting a hopeless aspect and, like surgery, it utterly fails in others presenting a hopeful appearance. This is due probably, as has been mentioned by various authors, to some cellular or biological principle which we are unable to demonstrate or comprehend.

In gynecology, as in other departments of medicine, radium may be applied in one of three ways, namely:

1. In the form of radium capsules (metal vehicles —brass, silver, gold or platinum—containing glass tubes of a radium salt).

2. In radium needles (metal needles containing the element encased in glass tubes in the form of one of its salts).

3. In the form of glass pearls (containers of radium emanation or radium gas).

It is not customary to apply the element itself. A radium salt is usually employed. This may be applied properly screened within the genital tract or through the abdominal wall, likewise properly screened. Radium is now frequently employed in combination with deep x ray therapy through the abdominal wall. In a voluminous literature most favorable results are being reported by the use of the combined method. Personally, I have not had sufficient observation to speak of the merits of this plan, but both in this country and in Europe, encouraging results have been recorded.

Of the local agents used in the treatment of pelvic disease, radium, the x ray and radioactive substances are of the greatest value and are the outstanding local measures in use, and of these, radium occupies the foremost rank. Indeed, it fulfills a need that cannot be supplied by any other remedy.

The use of radium therapy in pelvic disease is in its infancy, but it has, in a measure, revolutionized the treatment of certain lesions heretofore regarded as wholly surgical. What the future holds for radium, in a more extended application to pelvic affections, it is impossible to say.

While the substance is of the greatest value, yet a word of warning may not be out of place even from an enthusiastic proponent of this plan of treatment.

Radium, as you all know, is being universally employed for a great variety of conditions, probably too universally and probably, too, for a greater variety of conditions than the means justify. This, however, is true of most innovations and radium is still in the stage of innovation. Enthusiastic use often evokes a certain amount of abuse and that radiotherapy has been abused, no one will deny. That radium is not a cureall the most interested and experienced radiotherapist will acknowledge, though it is being used and with variable success in a greater variety of conditions than any other single substance.

We believe still greater success awaits a wider application of the remedy and where the next step will lead it is impossible to say. Perhaps the gap between the x ray and radium, wide as it is, will be exceeded by the gap between radium and the next most powerful radioactive substance which awaits inevitable discovery. We may, through the subtle influence of agents endowed with still more powerful radioactivity, find a sovereign remedy for cer-

*Presented at a regular meeting of The Bucks County Medical Society, February 13, 1924.

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tain diseases of the pelvis and of the medical sovereigns today, if I may use that term, radium, unquestionably, stands supreme.

APPLICATION

Radium in its elemental state is unstable, hence for therapeutic purposes, rays of its various salts are employed. The salts generally used are the chloride, carbonate, bromide and sulphate. The latter two, owing largely to their insolubility, are most commonly used.

The application of radium may be made upon the vulva, within the vulva, within the vagina, the cervical canal, the uterine cavity or over the abdominal wall (Fig. 1). In certain instances it may be desirable to combine an external with an internal application (Fig. 2).

The salts of radium are supplied in glass capsules and these are encased in metal tubes of steel, brass, platinum, silver or gold. These metal containers are used, first, to prevent the loss of the radium salt, and second, to act as a screen to the alpha and beta rays. Radium salts are also supplied in platinum, steel or silver needles and also in glass capillaries or pearls containing radium emanation or radium gas. Either of these methods of application may be made separately or a combination of one or more may be used. Before applying radium it is necessary to provide further screening, and this is done by covering the metal tubes with dental rubber, the object being to screen or filter the alpha and beta rays, because therapeutically the penetrating gamma rays are the most effectual and, therefore, the most desirable.

DOSE

The dose of radium is expressed in milligram hours or millicuries, abbreviated mghrs. or mcc., each representing an application of one hundred milligrams of radium or radium emanation for one hour. In other words, the exposure of a patient to one hundred milligrams of radium for one hour is equivalent to a one milligram hour dose; ten hours to a one thousand milligram hour dose; twenty hours to a two thousand milligram hour dose and twenty-four hours to a twenty-four hundred milligram hour dose. The latter represents the usual dose applied to malignant disease of the cervix, either of the early borderline or inoperable type. In the simple functional menorrhagias of young women and women in the early childbearing period of life, in whom menstrual and reproductive functions are to be maintained, the dose of radium should be relatively small and applications should be made with great care. In these it is our custom to apply fifty milligrams from four to six hours or, in other words, to administer a two hundred to a three hundred milligram hour dose. This, in the simple functional menorrhagias, is usually quite sufficient to diminish the excessive menstrual flow without stopping the menstrual cycle altogether.

It has been pointed out that pregnancy after radiation occurs only occasionally, so in the reproductive period of life, relatively small doses should be used. Small doses are usually quite sufficient to control the menorrhagias of myopathic uteri and also in hemorrhage resulting from socalled cystic oophoritis. In the simple menorrhagias, as already indicated, a single dose usually relieves the symptom. A second dose may be employed but, as a rule, is not necessary.

In uterine myomata, especially in women approaching, or those in the menopausal years, larger doses with repetition is sometimes necessary and in uterine malignant disease, especially inoperable malignancy, still larger doses with repetition may be required.

TISSUE SENSITIZATION

It has been definitely shown that all tissues, both normal and pathological, are variously affected by radioactive substances. The normal adult tissue cell, however, is much more resistant, less sensitive and less likely to injury than the embryonic actively growing pathological cell. The younger the life of a neoplastic mass, therefore, the more readily influenced is its cell character. With regard to neoplasms, it has been demonstrated that myomata stand first in sensitiveness to radiation, sarcomata occupy second place and carcinomata, the most resistant of all, third place.

BIOLOGICAL ACTION

With respect to the biological action of radium, it has been demonstrated that there are three zones of reaction. First, immediately surrounding the point of application there occurs more or less destruction of the neoplastic cells with fibrosis. Second, beyond the point of application there is only partial destruction with a less degree of fibrosis. Third, still more remote from the site of application, there is, instead of destruction, more or less cell stimulation. This description of the direct influence of radium applies especially to neoplasms of a malignant nature.

Dewell Gann, Jr., asserts that radium possesses, first, a general selective action, and second, a selective destructive action, general selective action, in that it destroys all tissue with which it comes in contact, and especially selective action in causing regression or even wholly destroying neoplastic disease. By some authors this statement is not accepted. Nevertheless, it does influence both normal and pathological tissue, and it does seem to cause regression or destruction of neoplastic disease without inflicting severe or permanent damage on the normal surrounding structures, provided it is properly used.

One may say that radium, then, is more or less destructive both to normal and pathological tissue. But normal adult tissue cells, owing to greater maturity, are infinitely less influenced than the immature embryonal tumor cells. The intensity of the histobiological changes occurring after radiation, depend upon the dose applied as well as the local reaction of the disease and the systemic response of the patient.

Henry Schmitz, who has made an extensive study of tissue exposed to radium, while deprecating routine biopsy, advocates the excision of tissue for diagnostic study immediately before the application of radium. I wonder if the danger of autovaccination of malignancy, after diagnostic excision, or diagnostic curettage, if it occurs at all, is as reprehensible as some investigators would have us believe. Personally, I should prefer, in case of doubtful malignancy, to run the risk of autovaccination, if such exists, before being submitted to either radiation or operation.

Schmitz, after the initial diagnostic excision is made, followed by radiation, advocates repeated test excisions at intervals of from eight to fourteen days

for a period of six weeks, at a time when ordinary tissue alterations are complete. In a large series of cases Schmitz made postradiation tissue studies after three, six, eighteen, and twenty-four months. In the latter tissue was collected from patients, postmortem. The microscopic examination of tissue

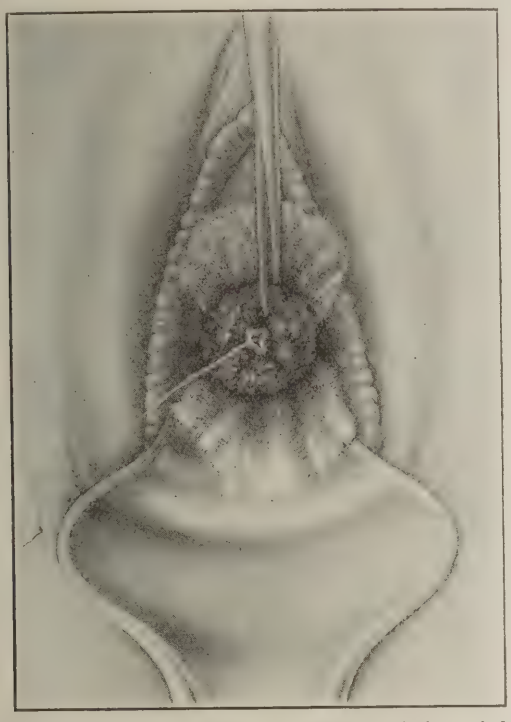

FIG. 1.—Application of radium capsule in cervical canal for carcinoma of cervix.

radiated demonstrates most vividly the power and influence of this method of treatment. The changes are pronounced and constant. The alteration in cell architecture, following the application of radium, is described by various authors, including Schmitz, in four stages, as follows:

1. During the first stage there is observed serous infiltration, characterized by swelling of the cells and their nucleus with a beginning invasion or exudation of lymphocytes and polynuclear leucocytes. These phenomena may occur as early as the third day and in nearly all instances they are observed by the eighth or tenth day.

2. There follows in the second stage more or less degeneration of the cell nucleus, the cell protoplasm and the cell wall. These cellular alterations are indicated by fragmentation of the nucleus, cytolysis, granulation, and vacuolation of protoplasm. Achromatism and cessation of mitosis are all also observed during this stage.

3. The changes in the third stage are of an inflammatory nature, as shown by leucocytic and lymphocytic infiltration, proliferation of the stroma and the formation of fibroblasts with rapid growth of bloodvessels. Phagocytosis occurs simultaneously, the white blood cells acting as microcytes and the fibroblasts as macrocytes.

4. The fourth stage represents a period of reconstruction or repair of devastated tissue and destroyed tumor cells. Reconstruction or replacement is effected by the formation of granulation and fibrous tissue which finally becomes covered with epithelium, and in which numerous capillaries are found. Should the dose of radium be excessive, necrosis with avascular fibrosis takes place.

The changes herewith described begin, as has been demonstrated by numerous investigators, within a few days after the application of the element and may continue for two or three months. The maximum influence is usually evident by the end of the fourth or fifth week.

The alteration in tissue as outlined in the first two stages results directly from the action of the radium upon the neoplastic cells. The third stage is the local response of tissue to an irritant. This represents an inflammatory reparative process. The fourth stage represents a stage of reconstruction and healing, either by regeneration of the surface epithelium or by necrosis, followed by scar tissue formation.

SYSTEMIC REACTION TO RADIUM

In addition to the local response to the irritant, if I may use that term, there is in nearly all instances systemic response as well. Constitutional reaction is extremely variable both in onset and severity. It depends upon the dose administered, the character of the rays, the type and location of the tumor, and the general physical and psychical condition of the patient.

The constitutional reaction is due to certain alterations brought about in the blood from the direct absorption of the rays by the white blood cells and from the absorption of proteins and ferments liberated by the radiated growth. Marked constitutional response, provided the dose be small or moderate and the general physical and psychical condi-

FIG. 2.—Portraying position of the radium needles and emanation pearls for advanced carcinoma of the cervix.

tion of the patient relatively good, is not marked, though in most cases there is more or less toxemia.

Prostration of a varying degree is sometimes seen, but probably the most common systemic response to radiation is gastrointestinal irritability. This occurs first in the form of anorexia, but more commonly as nausea and vomiting. This may be moderate and of short duration, but sometimes it is severe and endures, as in one case, for three or four days or even

longer. Acidosis, in this patient, was extremely profound. In this connection the element of nervousness must always be taken into account and, while the patient to whom I referred was of the neurotic type, we felt, notwithstanding, that her gastric irritability was truly an evidence of acute toxemia, or an instance of true postradiation, nausea and vomiting. Sometimes there is more or less disturbance in the thermal system, manifested by subnormal temperature, especially if the toxemia be profound, but in most cases there is a mild elevation. This is coincident with a moderate acceleration of the pulse rate. The thermal and circulatory phenomena are both, as is gastrointestinal disorder, dependent upon the absorption of rays and toxic material and the susceptibility of the patient.

Occasionally headache is a sequel of radiation and it may be moderate or severe. As a rule, it is not marked.

Bladder irritability and vesical tenesmus with frequent and painful urination are not infrequent. This may be of very short duration or it may last for three or four days or even longer. Bladder irritability, no doubt, is due to faulty protection of the bladder wall with direct action of the rays thereon. Another postradiation sequel, due also to faulty protection, is rectal tenesmus, sometimes amounting to moderate and in some instances, to severe pain. This may disappear within twenty-four hours or it may last for several days. In a few cases the rectal distress is almost intolerable, so much so as to require a long interval of rest before reradiation can be performed. In very rare cases bladder and rectal irritability may be so intense and the suffering so great that patients will reluctantly submit to subsequent treatment. I have had two or three experiences of this kind. With proper screening and proper doses symptoms arising in the urinary or fecal canal may be reduced to a minimum, if not wholly prevented. In this connection it may not be amiss to mention that in certain cases with extensive tissue destruction, fistulæ may form between the vaginal canal and adjacent urinary and fecal conduits.

I have seen both urinary and fecal fistulæ result from radiation. A large vesicovaginal fistula occurred in one patient after a twelve hundred mghr. dose. This was given prophylactically, preceding and following a radical hysterectomy for extensive cervical carcinoma. In another patient suffering from inoperable carcinoma of the cervix, radium was applied rather heroically, probably too heroically, because a large rectovaginal fistula developed. Both these patients were operated upon subsequently, and both are living and well at the present time. The first patient was treated in February, 1918, and the second in August, 1922.

In a small percentage of cases tissue destruction may be intense and the systemic absorption of both the rays and toxic matter so great as to give rise to alarming symptoms, and even cause death, though death from the application of radium, fortunately, unless complicated by some serious intercurrent condition, is exceedingly rare.

We have never observed a radium fatality and we have personal knowledge of but one death occurring in Philadelphia. This patient was radiated by one of my colleagues for extensive cervical carcinoma of the cervix. Death from sepsis occurred three weeks subsequent to the application.

One of the most prominent systemic reactions occurs in the circulating blood. This not only is observed in patients radiated, but it sometimes occurs in individuals who handle the element more or less constantly. Hence, in those exposed repeatedly or for long periods, either operator or patient, it is customary to make systematic blood analyses. If signs of leucopenia are observed, the affected individual should be temporarily withdrawn from exposure to the rays. In patients who manifest a mild or moderate leucopenia, restoration of the blood quality is usually prompt. In severe and persisting cases blood transfusion may be necessary. Finally, the systemic reaction to radium as regards the blood changes is found less marked in individuals of relatively normal health, while in those impoverished by long persistent bleeding, by neoplastic toxemia, by poor resistance in general, and by undue susceptibility to the rays, the reaction is likely to be more intense.

Here it is quite in order to point out that radiation of malignant tissue either by x ray or radium, through its action upon the blood, excites a certain degree of immunity. It is thought that the liberation and absorption of proteins from the devastated cancer cells produces specific antibodies for other cancer cells or metastatic cells in the various tissues of the patient. This conviction is confirmed by the investigations of Morison, Wedd, Russ, Blumenthal, Behen and others. From experiments carried out both upon animals and upon human beings, Behen, by transfusing the blood of radiated animals into animals which had not been radiated, produced the same leucocytic and lymphocytic reaction as observed in those submitted to direct radiation. On the other hand, transfusing blood of nonradiated animals into controls did not show these significant phenomena.

INDICATIONS FOR RADIUM THERAPY IN GYNECOLOGY

Radium may be used in the following pelvic lesions, both functional and organic:

1. In primary and recurrent malignant tumors of the uterus.
2. In benign tumors of the uterus.
3. In the simple menorrhagias and metrorrhagias in which no cause can be determined.
4. In the menorrhagias and metrorrhagias due to cystic oophoritis.
5. In menopausal hemorrhage.
6. In endocervicitis and cervicitis, associated with leucorrheal discharge.
7. In dysmenorrhea.
8. In malignant disease of the vulva and vagina.
9. In benign and malignant disease of the bladder.
10. In malignant disease of the rectum.
11. In the menorrhagias and metrorrhagias of myopathic uteri.
12. In vulval leucoplakia and vulval and anal pruritus.
13. In localized recurrent malignant nodules following amputation of the breast.

In all the conditions herewith enumerated, radium will prove of utmost value, but it finds its greatest service in uterine malignancy and in uterine myomata.

RADIUM IN UTERINE CANCER

The uniformly discouraging results obtained by the radical operation for cancer of the uterus have led some writers to advocate radiation instead of

operation, but this teaching, as yet, has not been universally accepted. If applied early, surgery, we believe, still offers the most hopeful outlook for permanent cure, but that radiation is of immeasurable value in the indications to be mentioned later, none can deny.

1. As a prophylactic preceding and following operation.
2. As a general adjunct to the surgeon.
3. As a palliative of the first rank.
4. As a curative in certain cases.
5. As of great value in all.

The judgment, in general, today indicates that radium is most influential in the early stage of the disease, the young or immature cell stage, and this is the period when cervical carcinoma likewise is most responsive to radical operation. We believe, therefore, with most observers, even the most ardent radium enthusiasts, that as a curative measure in the early stage operation should receive first choice and radium second. Future experience may force a revision of this opinion.

Clark, who has had wide experience both in the operative and radioactive treatment of cervical malignancy, believes that: "At present we are not justified in using the element as a curative agent in the operable type of the disease." There is a wide divergence of opinion also regarding the choice of operation or radiation in the socalled borderline cases. Most observers believe that as much, if not more, can be accomplished by radiation as by operation. Statistics seem to confirm this view. It is well known that operation, except in the very early stage of cervical carcinoma, nearly always fails.

Otto Von Franque asserts that the number of five year cures of borderline cases for both operation and radiation are about equal and average about twenty per cent. Zweifel reports 27.5 per cent.; Franz, 28 per cent.; and Kerher, 27.9 per cent.

Von Franque asserts that the results for radiation and operation, in operable cases, are about equal also and average fifty per cent. Zweifel reports a five year cure of 50.8 per cent., Doderlein forty-eight per cent., and Kerher fifty-eight per cent. These results are far better than those which obtain in this country, some men fixing the five year operative cures at ten per cent. or less.

In the inoperable type Von Franque does not believe that more than six to ten per cent. of the cases are cured by radiation, although he quotes Kerher who lays claim to a cure in seventeen per cent.

W. P. Graves favors operation in cases regarded as operable because it removes, he says, more of the disease than radium, as well as the occasionally diseased regional lymphatic glands. Lymphatic gland infection, he affirms, is too distant for radium to affect lethally.

In this relation it is well to recall that Wertheimer asserted that he never saw a patient with uterine cancer recover permanently who had frankly infected lymphatic glands. This is quite in accord with our own experience. I should like to add also that many authors, including Graves, do not believe in preoperative radiation as a prophylactic. They object to the method on account of certain "technical difficulties" involved.

Personally, I do not believe that preoperative radiation does any material harm; on the contrary, I believe it does some material good.

L. Mayer says he has noted a marked decrease in the deaths from peritonitis following operation in patients whom he had previously radiated. This author also found that preoperative radiation increased his operability from fifty to sixty-five per cent. Owing to the cessation of bleeding and control of toxemia after radiation, it is quite natural to suppose that patients are better equipped to withstand surgery.

Personally, I am firm in my conviction that preoperative radiation of cervical cancer is, indeed, worthwhile. I believe, moreover, that it is a wise postoperative expedient as a prophylactic, provided it is applied with due regard to impending irritation of the bladder and rectum if not organic destruction.

However, the indiscriminate, too frequent, as well as too long, postoperative exposure of both the urinary and fecal canals may, and occasionally does result in a slough with subsequent fistula formation, as indicated in the two patients to whom reference has already been made.

Wertheimer, in writing of the prophylactic influence of radium with reference to metastasis found, upon examining thirty-two patients postmortem, that radiation did not excite but rather hindered metastasis. Patients who were not rayed showed metastasis in fifty-four per cent., while in those radiated the percentage of metastasis was forty-eight. This in itself would seem an additional, if not a convincing reason, why radiation should be used in a prophylactic way.

RESULTS

Bailey and Healy report the results of nine hundred and eight cases of uterine cancer treated by radium at the Memorial Hospital in New York. Their observations support the experience recorded by Kelly and show that he was nearer right than wrong. The approximate results reported by Bailey and Healy with reference to five year cures in cervical cancer are portrayed in the following table:

Type	*No. of Cases*	*Percentage Cured*
Early operable	45	71
Borderline	33	24
Recurrent	168	22
Advanced or inoperable	190	7.4

Of three hundred and thirteen cases reported by Clark and Keen, one hundred and twelve patients are living and two hundred and one are dead. Of the three hundred and thirteen cases, all but twenty-three involved the cervix. Of the twenty-three body cases, twelve patients were alive after from three to six years. The remaining fourteen are below the three year limit, but all are in excellent health.

Recaséns, who has been employing radium in cancer of the cervix for more than ten years, is unusually enthusiastic, perhaps too enthusiastic, because he says he has relieved or eradicated the disease in from sixty to seventy per cent. of the four hundred patients upon whom the element has been used. He reports numerous cures extending over a period of three, four and five years, respectively.

J. W. Ross reports four hundred and seventy-five cases of cervical carcinoma in which various forms of treatment were applied. He believes that in early

cases surgery alone provides good results, but he very aptly asserts that surgery and radiation combined gives slightly better results than surgery alone. In the operable cases, but not necessarily in the early stage, the combined method—radiation and operation—gives the best results. Probably later on radiation will replace operation, even in early cases, but as yet most authors are not satisfied that radium is superior to surgery, nor have more than a very few had the temerity to adopt a plan which is still in an uncertain period of development.

A word in this connection may not be amiss regarding the combined method of treatment, namely, x ray and radium.

R. Duncan, in writing of his experience, quotes Janeway, who tabulated six thousand cases of uterine cancer observed both in this country and in Europe. This tabulation shows that of every one hundred patients applying for treatment, sixty are beyond the stage of operability. Of the forty per cent. subjected to surgery, seven or eighteen per cent. will die as the result of the surgical procedure and eight will probably remain well. Twenty-five will have a recurrence. Hence with the sixty unsuitable for radical surgery, the seven who die from the operation and the twenty-five in whom there is recurrence, leaves only eight who will remain well. Therefore, ninety-two out of every one hundred patients are inevitably doomed unless some other method than surgery is provided for their relief.

Duncan shows that the results of treatment are materially improved by high x ray voltage combined with radium. He advocates keeping the patient in the hospital for a period of from five to seven days and applying during this time one thousand to six thousand mcc. of radium. After the local reaction subsides, or in from six to ten days, the patient is given a thorough radiation with high voltage x rays. This author reports three hundred patients thus treated prior to 1922. One hundred and twenty-two, or forty per cent., of these patients were clinically well from two to seven years and of this number ninety-seven, or 36.4 per cent., are still clinically well.

In a personal letter Dr. Howard Kelly states that in cancer of the cervix he prefers radiation to operation, though he does not always hope for permanent relief, especially if the disease is extensive and well beyond that structure. The improvement in extensive cases was only temporary, he found, but even in these, the application, he asserts, is worth while. In cancer involving the uterine body, Dr. Kelly, in accord with most men, recommends radiation if constitutional affections, such as kidney, heart, pulmonary, arterial or other disease, contraindicate operation.

Kelly and Burnam believe that every inoperable cancer of the cervix and vagina, provided general metastasis is not present, stands a chance at least of one in four of being cured. With the joint use of radium and operation in the operable types a curable rate may be raised in three out of four or better.

As early as 1915, Kelly and Burnam reported two hundred and thirteen cases of cancer of the cervix and vagina treated with radium. One hundred and ninety of these were classed as inoperable. Fifty-three of these patients were clinically well after a period of five years. One hundred and seven were markedly improved. Thirty-seven were unimproved.

Burnam also reports four hundred cases of genital cancer treated with x ray and radium combined, with a recovery of 46.91 per cent., and in another series of one hundred and fifty-five cases treated by the combined method, Burnam obtained eighty-three or 55.51 per cent. recoveries. In two hundred and three cases of uterine cancer subjected to operation there were ninety-eight or 48.27 per cent. recoveries.

J. and J. L. Ransohoff reported twenty-five cases of uterine cancer radiated with eleven recoveries. Three of these were operable and eight inoperable.

H. Bailey records one hundred and twenty cases in which twenty-one per cent. of the patients showed such improvement as to justify the possibility of cure, but of these only fifteen per cent. were well after two years.

R. H. Boggs believes that one fourth to one third of the hopelessly inoperable cases will totally disappear by the application of radium.

Recaséns, of Madrid, believes that sixty per cent. of cures can be obtained in all cases and in nearly all, if the disease is localized and early treatment instituted. He states that one hundred per cent. of cures should be obtained in the incipient stage of the disease and he bases this assertion on sixteen early cases treated with complete regression and recovery in all. Most of these patients have passed a three year period without recurrence. In addition, he treated one hundred and eighty-two inoperable cervical cases—forty-seven in 1914—and in these twenty-nine patients were still well in 1919. In 1915 he treated seventy-nine and forty-five patients were still well in 1919. In cancer of the body he obtained fifty per cent. of cures. He concludes by stating that in seventy per cent. of his inoperable and ninety-five per cent. of his early operable cases the patients have recovered. In body cancer, however, he prefers operation, if no systemic contraindications are present.

In 1919 Henry H. Janeway reported thirty cases of genital cancer radiated with a posttherapeutic history varying from three and one half years to six months. Seventeen of these were primarily of the cervix, four recurrent, four of the fundus and five of the vulva. Of the seventeen patients, one was well after three and one half years; one at the end of three years; one at the end of one and three quarter years; nine beyond one year and all showed regression. Five of the seventeen cases recurred after the first treatment and are being treated, he says, but are showing a poor outlook. The four body cases showed good results. Of the four recurrent cases, two showed promise of cure and two were unimproved. Of the five vulval cases two obtained a good result and the others showed such marked improvement as to expect cure.

DOSE IN CANCER

The dose should not be less than one hundred mgs. for a period of from twelve to twenty-four hours, but by some larger doses are being used. If there is involvement of the bladder or rectal wall, the dose should be smaller and given with extreme caution. Repetition is made in four weeks, if necessary.

Some writers recommend a longer interval and a long intervening period is recommended, particularly if the disease involves the bladder or bowel. Two or three doses may be given—sometimes more—according to the local result and systemic reaction of the patient. Repetition, however, is not practised to the extent it was a few years ago. A second or third dose may be employed. Moderate repetition, if wisely practised, may not do any harm. It may do some good, though whatever good is accomplished (and the greatest, too) is brought about by the first dose—the first application.

My personal experience with radium therapy in cervical carcinoma has been limited almost exclusively to the treatment of the hopelessly inoperable type. Of one hundred and twelve cases treated, I can report only two which one can designate as cured, covering the five year period, though every patient was benefited both locally and systemically.

Notwithstanding, the growing trend of applying radium to the borderline and socalled early cases, we still believe, owing probably to lack of courage, and a clinical environment, that in early cases, if not in those classed as borderline, that operation and not radiation, for a problem always vexatious and always uncertain, despite growing reports to the contrary, offers the most hopeful outlook for ultimate and permanent recovery. I do, however, hold an open mind that with wider application and more extensive observation, a few years hence may cause one to reverse this opinion, an opinion now shared by the large majority of men active in pelvic work.

We have been using the agent as a prophylactic also before operation and for a similar reason after operation. As a preoperative prophylactic, radium should be applied within the cervical canal (2,400 mghrs.) four weeks before operation. We are convinced that this is a good plan to follow, because it destroys or seals by fibrosis the exuberant mass teeming with all forms of pathogenic bacteria and hence must hinder, to some extent at least, the propagation of postoperative infection.

This course we have pursued in a large number of cases and have had no cause for regret. The technical difficulties with greater danger of infection, preoperative radiation is said to produce, we have never encountered. As regards the palliative action of radium one may, without qualification, say that it will do more than any other known agent at our command. First, locally by temporarily, if not permanently, inhibiting the growth, allaying discharge, controlling hemorrhage and to a less extent alleviating pain. Second, by providing the patient with, temporary at least, if not permanent systemic improvement.

(*To be concluded*)

Tuberculous Disease of the Spleen*

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Much of the difficulty in reaching a differential diagnosis in conditions cursorily diagnosed as splenomegalies must be ascribed to the stage of the disease when seen by the physician. There are now recognized several clinical types of splenomegalia, the proper classification of which, i. e., the individualization of syndromes, demand the most delicate refinements in diagnostic skill. In many instances the etiology and pathology of these splenic enlargements present a clinical picture so strongly interwoven with allied characteristics that a trustworthy differentiation becomes almost impossible.

If it were possible that our knowledge of the physiology of this organ encompassed a greater latitude than it does at present, we could perhaps speak with greater certainty upon its functional perversions.

In most splenic tumors it is the blood examination that has given the greatest assurance in discriminating between these clinical types. It is the blood examination only which can give us the convincing evidence upon which a pathological differentiation can be made possible. The anamnesis, the symptoms and physical signs are valuable assets, but without the study of the blood, the clinical picture will still remain strongly befogged. Not infrequently a patient will consult a physician for a perceptible abdominal enlargement with a history so vague that it is impossible to fix the date of the commencement of the pathological process. It is only by close questioning that some of the data can be obtained which may elucidate a better understanding of the cause of the disease. Inasmuch as most of the predominant symptoms of splenomegalies are inconstant and variable, the difficulties in obtaining a history can be appreciated.

On September 2, 1923, a patient fitting fairly well into this picture presented himself for advice relative to a large tumor in the left side of his belly. The man was employed as a railway mail clerk. He was fifty years of age and had never been seriously sick. In December, 1922, he suffered an attack of grippe and was sick for three weeks, but did not quit work.

During January, 1923, he suffered with a severe pain in his back. This pain extended from his shoulders to his buttocks and was constant. It was most severe from 8 p. m. to 2 a. m. and robbed him of his sleep. Frequently he was compelled to walk the floor to get relief. The pain lasted for six months. He was treated for rheumatism. The pain gradually ceased in its severity and then disappeared entirely. His relief from pain, however, was of short duration. A pain in the pit of his stomach manifested itself in June and lasted for about six weeks

*Presented at the meeting of the Southern Surgical Association, December, 1923.

when it shifted to the left side immediately under the short ribs. The pain was described as severe, heavy and dull in character.

About the middle of June he noticed that his strength was failing and that he was losing in weight. The loss was about forty pounds in six months for his normal weight of 160 pounds. He was being treated for ulcers of the stomach. During his whole period of indisposition he had a good appetite, no digestive disorders and no bowel disturbances. There was, however, a strong tendency toward constipation. His sleep when there was no pain, was good. He kept at work most of the time. During the middle of August he noticed that there was a large swelling in his left side for which he consulted a physician. Electrical treatment was administered. The tumor, however, increased in size so rapidly that the treatment was discontinued and further counsel was sought.

When this patient was seen by me on September 2, 1923, his general appearance was that of a patient convalescing from typhoid fever. His emaciated appearance was in marked contrast to the clear intellect and the bright eyes. His gait gave evidence of a marked systemic weakness. Inasmuch as his appetite was good and his sleep refreshing, he was unable to account for both the loss in weight and the weakness. The color of his skin was sallow with a strongly murky cast, rather akin to a melanoderma. There was nothing unusual about this as he said that it was his normal color. There never was a jaundiced condition. The skin was dry, parchmentlike to the touch. There was no marked suggestive pallor of the mucous surfaces. The tongue was pale with a bright red streak in the centre. At no time was there vomiting of blood nor bleeding from the nose or gums. The Wassermann reaction was negative and the urinary analysis disclosed nothing abnormal.

Desire for water was ever present. He was free from cough and bronchial irritation. Small quantities of sputum were expectorated occasionally. Some of this sputum was examined microscopically with negative result as to tubercle bacilli. No glandular enlargement about neck, axilla or groin. No edema of lower extremities. Examination of abdomen revealed sufficient fluid in the cavity to impart a well marked tenseness to the belly wall. Its presence hindered the examination of the abdominal contents. Nothing could be definitely elicited on the right side. The lower border of the liver could not be outlined. Pressure upon the abdominal wall provoked no muscular defense, neither did it cause pain. On the left side a tumor was readily palpable, clinging closely to the abdominal wall and extending from under the left costal arch down to the iliac crest with its characteristic notched anterior border in juxtaposition to the abdominal midline with its anterior and lower borders distinctly outlined. This tumor could be moved in a diagonal direction upward and backward from right to left with ease. The manipulation was painful. When at rest tenderness on palpation was confined to the upper portion of the tumor only. The tumor did not respond to the movement of the diaphragm. On percussion the note was uniformly dull over the surface and extended as high as the seventh interspace.

That the tumor which filled the greater part of the left abdominal cavity was a hypertrophic spleen could be accepted without doubt. The question now paramount was the grouping of the pathological process.

If we would have accepted the clinical phenomena and physical signs of this case without further aid of a blood examination, the inference could have been made that the condition was a primitive splenomegaly. However, the result of a rectal examination made previous to the blood examination interjected doubt as to whether the splenomegaly in question could be classed in the splenic anemia group. The rectal examination was a digital one and was provocative of excruciating pain whenever the tip of the examining finger came within close proximity of the left iliac fossa. The pain was not caused by any lesion in the rectum, that part of the alimentary tract appearing to be normal. It was a pathology beyond the bowel, the nature of which could not be definitely disclosed on account of the intense pain caused by the examination. From the viewpoint of a diagnosis this pain proved sufficiently persuasive to entertain a change of opinion relative to the etiology of the splenic enlargement and a provisional diagnosis of tuberculosis or possibly a malignancy (sarcoma) of the spleen was made.

The blood examination which showed an almost normal blood picture—red blood cells, 3,500,000; white blood cells, 8,800; hemoglobin, 70 per cent.—only aided in carrying the diagnosis more distant from the splenic anemia group.

Inasmuch as the patient was anxious to be relieved of this tumor which caused discomfort and pain, he was informed that an operation of an exploratory nature only would be undertaken. A left rectus incision about five inches in length was made. The notched border of the spleen immediately presented itself in the wound. The ascitic fluid was of a pale straw color. My objective for the moment was not so much the greatly enlarged spleen as was the site in the left iliac fossa which appeared so painful on rectal examination. The condition was readily discovered and proved to be a mass of greatly enlarged lumbar glands. Further exploration disclosed the iliac glands also much enlarged. Following the course of the enlarged lumbar glands upward a veritable roll of enlarged glands could be traced toward the diaphragm. Many of these glands were as large as robin's eggs. They were firm, the blood-vessels about them being markedly injected, distinctly revealing anastomotic branches that normally would have been invisible. The lymphatic glands on the under surface of the liver, especially those surrounding the gallbladder, were enlarged and easily palpable. The glands occupying the hilum of the spleen were equal in size to those of the liver and readily demonstrated. The mesenteric glands could be promptly recognized and were all greatly enlarged.

The portion of small intestine which presented in the wound upon retraction of the spleen was found distended with gas, the walls of the gut being almost translucent. The mesenteric base appeared thickened, showing increased vascularization. Upon pressure and rolling the bowel between the fingers no irregularities indicative of ulceration could be detected. Here and there upon the bowel surface were deposits of cheesy matter, some as large as a grain

of wheat. Microscopic examination of these cheesy deposits disclosed them to be semifat and colloid-like material.

Examination of the liver revealed a change from the normal deep brown color to a lighter brown. The sharp anterior border was obliterated and retracted considerably from the lower border of the ribs. Instead of the sharp border there was a well rounded thickened surface which gave the appearance of the organ having rotated. Its consistency appeared normal to the touch. The gallbladder, whose walls felt thickened, was small. It was filled with bile which was easily expressed. The spleen readily filled the greater part of the left side of the abdominal cavity and appropriated the space from the dome of the diaphragm to the crest of the ilium and from the spinal column to the midabdominal line. Its artery was of enormous size and appeared as though it might be a half inch in diameter. The temptation to ligate the vessel was great. In passing the hand over the surface of the spleen adhesions of the cobweb variety were found to envelop the whole organ. Adhesions of a vicious nature were not demonstrable and ablation of the organ could have been accomplished without difficulty.

The surface of the spleen was smooth and through its perceptibly thickened capsule presented a mottled appearance, i. e., there were scattered upon its normally dark purple colored surface numerous small irregular light brown (almost white) patches. These light brown areas were interpreted as resulting from infarctions. The consistency of the organ appeared considerably more firm than normal which was attributed to the existing general hyperplasia. Firm but gentle pressure imparted the sensation of numerous small kernels imbedded in its substance immediately under the capsule. The peritoneum was normal in appearance and did not give evidence of correlation with the existing morbid processes.

The gross pathological lesions in the abdominal cavity were sufficiently clear to establish a diagnosis of tuberculous disease of the spleen. It must be regetted that a wedgeshaped piece of tissue was not removed from the organ to obtain a microscopical verification. It was not done for certain reasons. This verification would have been desirable inasmuch as a diagnosis of a possible sarcoma had also been made.

Sarcoma of the spleen, both primary and secondary, is rare. However the clinical manifestation of rapid growth, much loss of bodily weight in a comparatively short time (three months), together with the radiating pain, tenderness and the presence of ascites, justified the inclusion of malignancy.

It was the pain the rectal examination induced which suggested a possible malignancy of secondary origin. However the gross appearance of the organ negatived any further reason for such an assumption. The organ lacked the general appearance of a sarcomatous process, prominent in which are usually nodules which project more or less from the surface of the enlarged organ. Such nodules were not present. The pathological picture fitted well into a tuberculous disease and grossly was accepted as such. In this I am pleased to say that I received the support of several physicians present. A matter remained to be solved and it was with a feeling of chagrin that it could not be accomplished during the exploratory examination. It was this: Was the existing splenomegalia of primary or secondary origin? From the history a vague inference could be made that a tuberculous infection might be active in the intestinal tract. This of course is more apparent now since the abdominal pathology has been disclosed. At no time, however, was there a definite intestinal disturbance which gave evidence of an existing lesion. The only evidence of any lesion that might be associated with the intestines was the pain caused by rectal examination. It was this pain which prompted the removal of the splenic tumor from the splenic anemia group.

A spleen must attain quite a large size before it can be discovered by the patient. From this it might be assumed that the organ was in an infected condition long before its size was recognized, and was active in disseminating toxic products to the liver and abdominal lymph glands. On the other hand it can be reasoned that tuberculosis of the spleen as a primary infection is admittedly rare and that the toxic agents were previously harbored in the intestinal tract. The problem for me is a difficult one to solve in this case.

The spleen of this patient was not removed. The associated pathology negatived any thought of removal. With its removal it might have been possible to inhibit further damage to the liver cells. I doubt very much, however, if the condition of the abdominal lymphatic glands could have been favorably influenced. In not removing the spleen the hope was entertained that enough of healthy parenchyma was left to carry on a certain amount of resistance against general infection, a faculty accredited this organ, thereby giving a better chance for longer life to this patient than could possibly be offered with a splenectomy. The patient was in the hospital three weeks. At no time were there any untoward symptoms. The course of his convalescence from the operative measure was apyretic, the temperature ranging from 97.2° F. to 99° F. with a pulse rate of 68 to 96.

In connection with the convalescence I may say that twelve days after the operation, the patient had a violent attack of coughing which caused the wound to burst open. When I saw him two hours later the spleen again presented in the wound. The organ appeared somewhat smaller, possibly due to the contraction of its muscular and elastic fibres. The surface of the spleen was covered with a white fibrinous deposit. There was little fluid in the abdominal cavity and the dressing was but slightly moist. The abdominal wound was again sutured and healed by primary union.

The patient's condition eight weeks after the operation was considerably better than before operation. He was entirely free from pain, felt much stronger, and had gained five pounds. His appetite was good, his sleep refreshing and he wished to return to work. There appeared to be a small amount of fluid present in the abdomen. The spleen had receded to a perceptible degree, so much so that the breadth of a hand could be easily placed between the lower border and the crest of the ilium. What the future will have in store for the patient will be of interest.

Anaphylaxis: Development and Modern Conception in Its Relation to Clinical Medicine

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The growing importance that the phenomenon of anaphylaxis has acquired the past few years in its application to internal medicine has not only yielded magnificent though limited results but it has also opened up a field rich in interest and future possibilities. The fascination which the subject has always had for the laboratory worker is responsible for the massive accumulation of experimental data to which can be attributed the growing interest in the subject on the part of clinicians and specialists. The history of medicine presents many examples of acute and penetrating speculations which left an astonishingly shallow impression on the medical minds of the day simply because they were unsupported by experimental data. Thus it was that when Hericourt, Richet and Portier discovered in 1902 that a dog which had received twelve days previously a harmless dose of actinocongestin became so sensitive to the effect of this substance that a subsequent injection of a dose far smaller than the lethal dose for a normal dog produced violent death, those who heard of the remarkable phenomenon labeled it as a physiological process which would scarcely interest the bacteriologist or clinician. All doubt as to the exceptional nature of the phenomenon was removed when Arthus, Otto and later Rosenau and Anderson demonstrated that a substance as harmless as horse serum was capable of setting up symptoms of anaphylaxis.

Ordinarily, injection and reinjection of an animal with an antigenic substance results in progressive increase in antibodies which ultimately induce a high degree of immunity. Under certain circumstances, however, a second injection is followed by severe and even fatal symptoms, indicating that instead of being immune the animal is hypersusceptible to the effects of the antigenic substance; indeed, an exact antithesis to immunity which means "with resistance to infection" and hence the term "anaphylaxis without protection" where actually the rules of immunity "are standing on their heads" as Besredka remarked.

Anaphylaxis, in the limited meaning of the term, designates the train of phenomena which follows the introduction of foreign protein into man or animal. While the first injection of the protein in itself produces no symptoms it serves to alter the power of reaction on the part of the body cells by rendering them unusually sensitive to this or closely related proteins. On the basis of this and the fact that many of us have come to regard the state of hypersensitivity in the light of a step necessary to attain the condition of immunity, it appears that the term coined by Richet "anaphylaxis" or "against protection" is a misnomer and that the word allergy introduced by Von Pirquet (1902) and meaning "altered reactivity" more appropriately describes the condition.

Following the observation of Von Pirquet, a great deal of work was done on the subject by a number of investigators, more particularly Arthus, Theobold Smith, Otto, Anderson and Rosenau. The researches of the last two, besides confirming the observations of the previous workers, brought out many valuable facts. They showed conclusively that sensitization was accomplished by extremely small doses varying from one one millionth to one c. c.; they proved that the hypersusceptibility was transmissible from mother to offspring and that such anaphylaxis has no reference to the condition of the father and is not transmitted by the milk. They demonstrated that anaphylaxis was specific and together with Vaughan, Wheeler, and Nicolle, they showed that the reaction was by no means limited to animal sera, but was elicited by proteins in general, peptone, egg albumen, milk, extract of peas and bacterial extracts. Another important achievement was the demonstration of the fact that the hypersusceptible state could be passively transferred to normal animals by injecting them with the serum of anaphylactic animals.

To Rosenau and Amos we owe the demonstration that proteins in a volatile state, as in the exhaled breath of men, when condensed and injected into guineapigs, will sensitize these animals to subsequent injections of human serum. While it is doubtful if the complex protein molecule passes out through the lungs in gaseous form, it more likely exists in colloidal solution. Rosenau was also able by keeping guineapigs in stables with horses, to sensitize them to horse serum. These experiments are of fundamental importance in explaining instances of human anaphylactic phenomena among those sensitive to horse protein, e. g., horse asthma.

Regarding the mechanism of anaphylaxis, the lesions and symptoms are practically the same with all proteins when the conditions of dose and administration are the same. The fact that various species present different pictures with the same protein is best explained on a basis of anatomical and physiological differences. Thus Schultz has shown that serum anaphylaxis is essentially a sensitization of smooth muscle which, during anaphylactic shock, contracts wherever it is present. In the guineapig, this effect is most evident in the bronchi, owing to the peculiar though normal anatomical structure of the mucosa which is so thick as to be thrown into folds which completely obliterate the lumen during the contraction of the smooth muscle, resulting in inspiratory asphyxia. This condition is less marked in dogs and rabbits who have relatively thin mucosa and poverty of smooth muscle, accounting for the lack of respiratory embarrassment during anaphylactic shock in these animals, which show smooth muscle manifestations in the form of vigorous peristalsis, vomiting and involuntary emptying of the bladder. In man, the definite urticarial and other rashes and the inspiratory asthma of those pecu-

liarly susceptible to a protein due to encroachment upon the bronchial space analogous to the condition occurring in guineapigs, the diarrhea and the secondary drop in blood pressure, all point to a similar action upon the smooth muscle. Herein we can also find an explanation of the pharmacological action of atropine, sedatives and anesthetics in alleviating or masking the symptoms of acute anaphylaxis.

Briefly, anaphylaxis in the human manifests itself in a severe fall in blood pressure and temperature, leucopenia, local and general eosinophilia, diminution of complement, reduced coagulability of the blood and according to Pfeiffer the presence of poisonous substance in the urine.

Passive anaphylaxis affords an interesting phase in the study of this subject and is illustrated by the maternal transmission of hypersusceptibility to the offspring, a fact I have previously alluded to. Rosenau, Anderson and others have demonstrated that injection of normal animals with serum from sensitized animals, renders the recipient hypersensitive so that an injection of the same protein elicits all the manifestations of intoxication. Besredka showed that the injection of animals with serum from patients hypersensitive to certain foods, renders these animals anaphylactic to an injection of the food in question.

Antianaphylaxis is a term first applied to designate the condition of insensibility to further injection of protein. It may follow recovery from anaphylaxis or it may be artificially produced by repeated injections of small doses of protein during the incubation period, that is, before sensitization is complete. As a rule, such an artificially induced refractory state is only temporary since the animal becomes sensitive again after three weeks. The subject of antianaphylaxis is of great importance from its relation to serum therapy, and thus far, no satisfactory method for producing this state in a sensitized person has been devised although the various and partly successful attempts made by different workers to destroy the socalled toxic substances of sera have actually no real bearing on the anaphylactic reaction. In the detection and prevention of serum disease it should be remembered that anaphylactic phenomena can usually be expected to occur if serum is given within a year or so following previous injection. It is important to question persons who experience discomfort when in the neighborhood of animals and it is well to make the simple test of rubbing in a drop of the antitoxin into the scarified skin with a tooth pick, as in vaccinating with cowpox virus; the urticarialike lesion develops usually within fifteen minutes and there are rarely any general symptoms. Some give atropine sulphate, one one hundredth grain, before injecting the serum and repeat the drug at twelve hour intervals in cases where serum has been given within the past year.

The anaphylactic or allergic skin reactions have found their greatest application in the diagnosis of tuberculosis, glanders, typhoid fever and syphilis. Kolmer and others have demonstrated well marked reactions in favus and ringworm. It must be remembered, however, that the skin reactions in these conditions are not always elicited, especially during the acute stages. An interval of time is required for sensitization, so that the greatest diagnostic value of these skin reactions is in chronic infections. The positive anaphylactic skin test is evidence of infection or sensitization to a particular protein and according to more recent work is no index as to the immunity of an individual to a particular infection.

RELATION TO IMMUNITY

One cannot escape being impressed with the close interrelation between anaphylaxis and immunity. It is difficult to reconcile the coexistence of immunity and supersensitiveness in the body at the same time, yet, an animal enters upon the anaphylactic state at the same time that its blood develops those properties which are indicative of the state of immunity. Metalnikov has examined this phenomenon and advances a rational explanation. The basis for anaphylactic phenomena is to be found in the increase in cellular sensibility, a widely accepted current view. This increased cellular sensitivity is in the nature of a protective phenomenon, the cells, once damaged by a particular agent, react on a subsequent exposure to the same influence, with an accelerated response. The presence of increased cellular activity is proved by experiments in which capillary tubes filled with the antigen in question are introduced into the peritoneal cavity and beneath the skin of animals which have been sensitized to the same antigen some weeks previously and are therefore sensitized from the anaphylactic point of view and have developed immunity. Removal of these tubes twelve hours later reveals that in the sensitized animal the tubes have accumulated a large number of leucocytes while in the control normal animals the leucocytic emigration is at a minimum. This is of course a phagocytic phenomenon and expresses itself in the clinical demonstration of anaphylaxis in the Arthus phenomenon, where the local application of an antigenic substance results in a pronounced reaction and accumulation of wandering cells at the site of injection. Upon the assumption of the recognition of cellular activity in these phenomena, the findings of Roux and Besredka of their inhibition of anaphylactic shock with anesthetics and narcotics, are readily explained.

In the absence of a better explanation of anaphylaxis we must agree with Metalnikov that anaphylaxis and immunity are but different phases of the same phenomenon; both processes have in common a purposeful attempt to protect. With a subsequent exposure to the antigenic substance, be it infectious, chemical or foreign protein, the primary result is obviously a resistance and hence protection conferred by immunity; however, when the second exposure is of massive intensity as, for example, that obtained under the artificial circumstances in experiments on anaphylaxis, the previously prepared cells respond with overwhelming violence in the production of a profound and violent reaction, the anaphylactic response, dependent not on hypersensitiveness but really an expression of an increased protective reaction.

RELATION TO NONSPECIFIC THERAPY

Another interesting phase of anaphylaxis is its study in relation to nonspecific or socalled foreign protein therapy. Reports from all over the world indicate that remarkable results have been obtained with this type of therapy, particularly in infectious

processes, notably in arthritis and respiratory affections. While, strictly speaking, anaphylaxis implies a specific hypersensitivity, specific as regards the substance introduced into the body, one must certainly view the marked reactions obtained in nonspecific therapy in the light of an anaphylactic phenomenon, where the body fluids and cells are altered in their response to an infectious agent or to the products of inflammation. So it is that the basis of nonspecific therapeusis from an immunological viewpoint has for its object an alteration of the reaction of the organism to the etiological agent rather than an attempt to influence the causative factor of the inflammatory process directly. The interrelation is further emphasized by the established fact that the symptoms of allergy may often be temporarily relieved by the use of nonspecific protein therapy in cases where one is unsuccessful in finding the specific allergin. Nonspecific therapy employs the anaphylactic reaction as a method of stimulation of all the forces of cellular and humoral resistance. It is difficult to conceive that the good results obtained in infectious diseases from nonspecific therapy are attributable solely to the leucocytosis and the proteolytic ferment which the leucocytes liberate. The profound alteration in cellular reactivity is so little understood that it is useless to attempt an explanation of the factors involved in nonspecific treatment until we know more about the mechanism of anaphylaxis.

CLINICAL CONSIDERATIONS

Evidence that a great variety of clinical manifestations have an allergic basis is rapidly accumulating in the literature. The relation of specific hypersensitivity in dermatological disorders and respiratory affections, particularly asthma, has already been firmly established on both experimental and therapeutic bases. Of particular interest are the cases of gastrointestinal allergy which may simulate any of the organic gastrointestinal disorders, not excluding ulcer. It is in these latter cases that it is often necessary to perform the cutaneous tests with a large number of materials before the offending substance can be found. Occasionally, an individual reacts to three, four or even six substances, making it necessary to eliminate one at a time so that the offending substance can be isolated by the process of elimination. It sometimes happens that the toxic substance is found to be a common and important dietary constituent, such as, for example, milk or potatoes, and it is in these cases that one experiences the greatest difficulty in attempting the process of detoxication. Occasionally it is impossible to bring about desensitization in spite of anything one may do. The case of a boy exceedingly sensitive to milk failed to respond to parenteral and alimentary attempts at desensitization. The alimentary tolerance ceased with eight drops of a milk solution of one in one hundred. An interesting case in a young woman of hypersusceptibility to milk, manifesting itself in an attack of asthma and urticaria, is reported by Clarke and Meyer who attempted hyposensitization with little success.

So large a number of hypersusceptible individuals give a history of the existence of a similar state in some other member of the family that the element of an inherited constitutional susceptibility cannot be ignored. My own work on rabbits has convinced me that sensitization passively conferred by the injection of the serum of another rabbit which has been actively sensitized to egg albumen, is only relative and temporary. This further supports the element of heredity in view of the fact that hypersensitivity as is ordinarily met with in the human is more or less a permanent condition.

The symptoms of allergy are numerous and are referable to practically every organ in the body. The most common symptoms are those which arise from the mucous surfaces, namely, the respiratory tract and conjunctivæ, which are more likely to be exposed to foreign substances in the environment, and also the gastrointestinal tract. The dermatological manifestations in the form of urticaria, angioneurotic edema, eczema and erythema are next in frequency. In addition to these there may occur neurological disorders, headache, arthritis, hypotension and urinary symptoms. All of these symptoms may be modified or aggravated by associated organic disease, reflex disorders, nonspecific irritants and coexisting infection.

It is important to keep in mind the possibility of allergy in all cases which fail to show an organic basis for their symptomology after careful investigation. Closer attention to the possibilities of sensitizations would undoubtedly save many patients from being placed in the psychoneurotic group. The cutaneous tests are easily performed and a large number of substances can be tried on the skin of the back in a short period of time. In addition, the use of the intradermal and ophthalmic tests are useful and often indispensable. The cutaneous test is simpler to perform than the intradermal, which is more likely to yield false positive reactions but may be more reliable in certain cases of food allergy where the simple dermal tests are unsatisfactory. It is advisable to control and verify one's conclusions by clinical tests of inhalation, ingestion or change of environment, according to which measure is indicated. When the desired substance is not marketed in the usual form of paste or powder, it is a relatively simple matter to inoculate the substance directly, using decinormal sodium hydrate as a solvent.

Close attention to details in the history with special inquiry into the occupational environment is helpful in giving a clue to the offending substance, thereby eliminating the necessity in many instances of having to resort to testing out a multitude of substances. For example, it is not uncommon for parents in relating the histories of an epileptic child, to date the onset of symptoms to a time when a new substance was introduced into the dietary as, for example, cow's milk. Neurologists have been able to control or even cure a limited number of epileptics who show definitely an anaphylactic basis.

IMPORTANCE IN INDUSTRY

In the last few years, attention has been directed to the importance of organic dust in the industries particularly in its bearing on the etiology of asthma, perennial hay fever, and obscure gastrointestinal disorders. If we consider the small proportion of individuals engaged in the lead and paint industries who present manifestations of poisoning and the large

number of workers who can continue in the same line of work for years with relative immunity, the conclusion that the underlying basis is allergic in nature is inevitable. The recent work of Bernton in occupational sensitization to castor bean, Walker's case of a jewel polisher who became sensitized to boxwood dust, Peshkin's case of a pharmacist in whom bronchial asthma developed because of an acquired sensitiveness to powdered ipecac, Rackemann's case of a coffee worker with a positive skin reaction to coffee dust and eight professional bakers with positive skin reactions to wheat proteins, and my own observation of a soap salesman who gave a marked skin reaction to soap powder, are typical examples of sensitization to organic dust in the industries.

COMMENT AND SUMMARY

It has not been my intention in this paper to employ the terms anaphylaxis and allergy in a synonymous sense. I have endeavored to replace the term anaphylaxis by allergy wherever the subject under discussion was not in the true sense an anaphylactic phenomenon. While I have attempted to show the close interrelation of anaphylaxis to immunity, nonspecific therapy and the various food and drug poisonings, the evidence that these are truly anaphylactic in nature is as yet sufficiently incomplete to warrant the use and adoption of an alternative name, as allergy.

It is evident from this historical and developmental sketch of anaphylaxis that clinically great strides have been made in a subject of which the explanation still remains obscure, in spite of the tremendous amount of devoted research on the part of laboratory workers throughout the world. The poverty of positive findings in the morbid histology of this subject is almost discouraging. In the histological examination of the organs of forty-two rabbits and twelve guineapigs dead from anaphylactic shock, I have been able to find nothing more than generalized congestion particularly of the liver capillaries with marked granular degeneration and swelling of the hepatic parenchyma and to a smaller extent of the adrenals. Broughton has found changes in the small arteries of the viscera characterized by endothelial degeneration, edema and fissuring of intima and media and splitting of the internal elastic lamina. The disappointment of the pathologist is shared by the bacteriologist and immunologist. The trend of immunological research seems to have taken the path of physical chemistry particularly in its relation to colloids. This course is justifiable when it is considered that a sudden change in the equilibrium of certain colloidal complexes of blood plasma is sufficient to produce all the phenomena of anaphylaxis. An example of this is seen in the chill which follows exposure to cold and precedes hemoglobinemia. The socalled hemoclastic crises with the accompanying fall of blood pressure, leucopenia, refraction of blood platelets and especially the changes in coagulability, suggest strongly an alteration of the colloidal complexes of the plasma. It appears that the vegetative nervous system is very sensitive to chemical changes of the plasma. Experiments in shock showing cardiac inhibition, disturbances of conduction, the effect of cutting the vagi and the action of atropine, tend to show the relative instability of the vegetative nervous system as a result of its susceptibility to colloidal alteration of the body fluids. Thus from the viewpoint of the nervous system allergy may be regarded as the specific sensitivity of the organism.

Considering our present state of knowledge of the entire subject and its vast clinical importance it is premature if not unfair to relegate its development to any single branch of laboratory research. The difficulties are great enough to require the combined and coordinated investigations of all branches of laboratory endeavor. Thus we will more closely approach an explanation of the mechanism of anaphylaxis, the elucidation of which will not only explain the closely allied conditions of serum sickness and infection in its relation to so called bacterial anaphylaxis but promises also to illuminate the factors involved in immunity, nonspecific therapy and the large number of food and drug allergies which are confronting the clinicians of today.

A complete bibliography will appear in the author's reprints.

A Case of Rat Bite Fever in Hawaii

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Rat bite fever, sodoku or sokiosa (Japanese), is an acute febrile disease caused by a spirochete, Leptospira Morsus-Muris, inoculated into man by the bite of an infected rat, causing a local disturbance at the site of infection, followed by a general fever, with a tendency to relapse and in some cases a cutaneous rash (Manson-Bahr).

This comparatively rare disease has been known to Japanese physicians for a long time. Futaka, Taniguchi, Takaki and Osumi demonstrated long slender spirochetes in the lymphatic glands from the tenth to the thirteenth day of the illness; later they found similar, though shorter and stouter, organisms in the blood stream, these latter now recognized as being the younger forms of the organism. Kaneko and Okuda confirmed this work later on. The incubation period varies from one to sixty days, with an average of ten days, during which time the wound heals. The cicatrix usually becomes inflamed and surrounded by blebs and even necrosis, although it was not so in this case. The lymphatics draining the area become tender and swollen. Eosinophilia and a moderate leucocytosis are usually present during the paroxysm but it did not occur in this case. About three per cent. of the house rats in Japan are natural carriers of the disease. The rat in this case was a

Rattus Alexandrinus, or tree rat, which is quite common in Hawaii at both sea level and in the mountains about dwellings. Salvarsan has proved a specific for this disease.

While tropical medicine is not exactly within the sphere of the rhinologist, the following case having occurred in a member of my family, I feel that a report of it should be on record:

Case.—The patient, a male child, just past his third year, was bitten by a rat on August 23, 1923. The older children, having caught the rat in the hollow of a tree, had tied a string about one hind leg. The patient put his right foot too near the rat and was promptly bitten on the tip of the great toe. The punctures were no larger than two pinheads and bled profusely. The wounds were cauterized and healed by first intention. As there were no further developments the episode was practically forgotten.

On September 19th the child became feverish, the fever continuing for about eight hours. The following day the child's body and extremities were covered by an urticarial rash. There was considerable itching for a few hours and by the following day the rash had entirely disappeared. At the time the condition was thought to be a slight indigestion, as fermentation in the gastrointestinal tract was noted.

On September 23rd an area of redness and induration appeared in the right inguinal region. The deeper glands seemed to be involved and the patient complained of pain when attempting to walk. At this time there was fever for about eight hours. At the same time there appeared several erythematous areas on the same leg below the knee and two spots over the left lumbar region. After profuse sweating the temperature dropped to normal, but the glandular enlargement and the spots persisted unchanged.

On October 1st, after four days without any temperature and only slight tenderness in the right inguinal region, there was another attack of fever. The temperature rose rather sharply at 10 a. m. and continued high until 9 p. m. A severe convulsion occurred just before the temperature began to fall. During the remainder of the night the fever was intermittent in character reaching the normal by daylight. The following day there was marked tenderness and induration in the right inguinal glands and the color was of a purplish hue. The spots on the legs and back had a similar color and were gradually spreading, two large ones coalescing. Even at this time the true cause was unsuspected, as the condition was not known to the physicians of this section. During the subsequent four days, outside of the glandular tenderness and induration and appearance of more spots, the patient appeared normal, although rather fretful.

On October 5th another attack of fever occurred which lasted from 3 p. m. until 3 a. m. During this attack the fever was more intermittent in character, with intervals of from one half to one hour of practically being normal. Profuse sweating usually followed each attack. During this attack the involved inguinal region seemed much less tender but the spots had become larger and much more numerous. At this time and between attacks numerous blood smears were taken with negative results.

On October 9th, the fever returned about 3 p. m. and continued until 6 a. m. At this time the right inguinal region showed practically nothing except a slight discoloration of the skin. The erythematous spots were as large as the palm of the hand, and of deep purplish red color around the edges, paling to a dirty yellow in the centre. One large spot was at the base of the neck on the left side and another covered the entire left deltoid region. Smaller ones were noted at the right corner of the mouth and numerous others of various sizes were seen on the back of the arms and legs.

At this time, after consultation, the case was considered one of rat bite fever, although the organism had not been demonstrated. Sulpharsphenamine, 0.2 gm., dissolved in 0.8 c. c. distilled water, was injected deeply into the right buttock. About one hour after the injection the temperature mounted a little higher and the spots became much swollen and indurated. The patient awoke frequently and complained of pain in the region of the spots. The temperature dropped to normal about 6 a. m. During the subsequent day the temperature remained elevated for about one degree, until evening. The erythematous areas continued tender and somewhat swollen during the next two days and gradually faded out. As the spots disappeared there appeared a puffiness of the left hand and right foot, as well as under the eyes. There was no pitting on pressure. Uranalysis during and between the attacks revealed nothing abnormal. Triple phosphates were excessive following the fever. During the subsequent four days the puffiness disappeared. No further recurrence was noted.

During the two weeks, until October 23rd, the patient seemed normal, when there was a rise of temperature of twelve hours' duration. On October 26th there appeared an erythematous spot on the chin. This spot was similar to those that appeared during the previous attacks of intermittent fever. During the next three days this spot extended upward about the right corner of the mouth and involved the upper lip. The color became of a deeper reddish purple fading as before into a central soiled yellow.

On October 26th, at 6 p. m., there was a sharp rise of temperature to 104°, with no other symptoms except increased redness and tenderness of the spot on the chin. At 8 p. m. 0.2 gm. sulpharsphenamine dissolved in 0.8 c. c. distilled water was injected deeply into the left buttock. Following the injection the temperature increased as in the previous attack and dropped with profuse sweating. During the remainder of the night the temperature was intermittent as before. By ten o'clock the following morning the body was covered with a fine urticarial rash which itched considerably. The urticaria disappeared by evening and the spot on the chin faded during the next two days. Smears taken from the centre of the spots during the fifth attack showed some short, thick spirochetes in a number of fields, but these were not sufficiently typical to differentiate them from artifacts.

November 14th. For three days there had been a slight rise of temperature each afternoon. Today at about three in the afternoon there was a rapid

rise in temperature to 102° by axilla and the fever remained high until two in the morning. At six p. m. 0.3 gm. of sulpharsphenamine, dissolved in 0.9 c. c. distilled water, was injected into the right buttock.

Following this injection the temperature was higher with shorter intervals of lower temperature and sweating. By one in the morning the patient was quite delirious, chewing the corner of the sheet and picking at the bed clothing and striking his head with his hands. After about one hour of this delirium, the temperature dropped to normal with profuse perspiring. During this attack there were no spots observed.

November 19th. At this time a few erythematous spots had appeared on the legs posteriorly. There were no other symptoms. It was decided not to wait for another attack but give two more injections of the specific drug at five day intervals; 3.0 gm. sulpharsphenamine, dissolved in 0.9 c. c. distilled water, was injected deeply into the buttock at 7 p. m. The only reaction was a moderate siderosis during the night and restlessness. The spots on the legs had entirely disappeared by noon of the following day.

November 24th. The final dose of sulpharsphenamine, 0.3 gm., was injected in order still further to assure a cure. The only reaction was a profuse sweating as before for a few hours. Before and following each injection a complete uranalysis was done with negative results. Practically two months having elapsed since the last attack of fever it was considered cured.

Very little information concerning this comparatively rare condition could be found in the available literature. Some authors advised intravenous injections of neosalvarsan, only one dose being necessary. Others advised arsenic by mouth and still others intramuscular injections. The more conservative treatment was decided upon and the end results were no doubt as satisfactory as though more radical measures had been employed. There was practically no local reaction at the site of the injections in the buttocks.

ALEXANDER BUILDING.

Intracutaneous Vaccination Against Smallpox*

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There are many landmarks among the ruins of empiricism in ancient medicine which lead one to believe that many of the early medical scientists recognized the infectious nature of certain diseases and the conferring immunity that an attack of some carried with them. But it was through the ardent efforts and the masterful experiments of Edward Jenner on smallpox that immunology reached its scientific culmination. And today, when we peruse the literature upon infection and immunity which has since been added to the archives of medical information, we are struck with awe and amazement by its vastness, and we look askant at the mighty strides this subject has made within recent years.

Since the introduction of vaccination by Jenner, many experimental observations were made upon the various methods and sites of vaccination. Some made the scarification upon the ankle, others, on the calf of the leg, others still preferred the thigh or the inner side of the arm. In fact, almost the entire anatomical topography has been explored and traversed in search of a favorable and suitable site, so that the inevitable scar might not stand out in such a prominent discord with cosmetic harmony. However, most of these experimenters confined themselves mainly to the old and unique method of cutaneous vaccination by scarification, changing the locality and habitation of the scar but not its objectionable hideousness. Even Pirquet, in his exhaustive studies on this subject, limited his field of observations to cutaneous reactions.

At length, however, the question was raised, whether the superficial skin and the specific process manifested through scarification created the desired immunity against smallpox; or could the same immunological results be obtained by using other means of conveying the vaccine into the system. This consideration was prompted by an anxious desire to obviate the usual injuries to the skin with the resultant scar formation, as well as to mitigate constitutional reactions and to avoid possible secondary infection. It was likewise of theoretical interest to see how the intracutaneous vaccination, the nearest method to cutaneous vaccination, worked on man.

By the experiments that Chauvsau started in 1866 and which he carried out on various species of animals and on man, it was proved that subcutaneous and intravenous injections of vaccine produced immunity against cutaneous revaccination. But in these subcutaneous injections, quite as much as in the old methods of inoculation, swelling and inflammation were often observed at the site of injection, and in some cases, a typical vaccine exanthem appeared. Almost simultaneously Fröhlich obtained practically the same results from experiments carried out upon cows. These findings were in agreement with those resulting from experimentations upon various species of animals by Senft, Casagrandi, Strauss, Chambon, Menard, Beclere, Calmette, Guerin, Tedeschi, Janson (also upon children), R. Kraus and Volk, who obtained positive vaccine reaction by this method.

The last works on the subject of vaccination and its practical application appeared in the years 1906-1910 by Nobl and Knopflemacher. The latter worked out completely, from a clinical point of view, the subcutaneous application of pox vaccina-

*Read before Bronx Hospital Clinical Society, May 14, 1923.

tion, similar to Pirquet's work on cutaneous methods. The principal results of Knopfelmacher's work were that complete immunity against variola is obtained in man by the subcutaneous injection of one c.c. of lymph in a dilution of 1:200. The symptoms of successful vaccination appearing at the place of injection between the tenth and fourteenth days were a circumscribed infiltration and erythema, the erythema disappearing in a few days while the infiltration remained several weeks.

In 1910 a work by Novotny and Schick appeared on vaccine inoculation of the rabbit by intracutaneous injection of cowpox lymph; proving that virulent lymph, when injected intracutaneously into the shaved skin of the rabbit, always gives positive results. The application of this intracutaneous method of injection of vaccine in man was not dwelt upon. We are, nevertheless, led to infer that intracutaneous vaccination would, with the proper technic show the same reaction on human subjects, eliminating the disadvantages of scarification, and lend itself to better observations than the deep process of the subcutaneous method.

The experiments of Leiner and Kundratitz show conclusively that they succeded, by the intracutaneous vaccination of cowpox lymph, in creating an immunity against cowpox virus, and in producing a typical reaction which differs from the usual reaction following cutaneous vaccination, this reaction being, moreover, much easier to observe than that which takes place following subcutaneous inoculation. They employed lymph supplied by the State Department in dilution of 1:3. This lymph was used as it was received or in dilutions up to 1:100. The diluent was either sterile physiological salt solution or plain sterile water. For general practice it is not necessary to have an exact dilution. In order to avoid the vaccine's coming in contact with the skin about the puncture, a separate large needle was used to draw the vaccine into the syringe, this needle being then removed and a finer one adjusted. The second needle was inserted 1.5 cm. into the cutis and its point tilted in such a manner that during injection a typical intracutaneous wheal was produced. After the withdrawal of the needle from the skin, the point of puncture was cleansed with tincture of iodine and alcohol.

It is important to carry out these details with precision, for the omission of any precaution might result in cutaneous vaccination at the site of puncture or, if the needle be inserted in the skin too superficially so that the point shows through, it is likely to result in a cutaneous reaction.

Of the fifty children that Leiner and Kundratitz injected intracutaneously, ranging in ages between two and eleven years, thirty-nine showed positive results; that is, a typical intracutaneous reaction with an immunity against any subsequent revaccination. In six patients the process was not completely typical, while in five there was no reaction at all, just as sometimes happens in cases with the usual vaccination.

In order to prove that immunization had been established by intracutaneous vaccination, cutaneous vaccination by scarification was afterward done on these same patients. If the cutaneous vaccination was performed at the beginning of intracutaneous reaction or about two days later, the result of the cutaneous vaccination was entirely negative. If the cutaneous vaccination was done fourteen days after the intracutaneous reaction had set in, some cases showed no reaction, while others showed a slight red nodule after the eighth or tenth day. This nodule underwent a retrogressive metamorphosis after two days.

The typical reaction of intracutaneous vaccination may be described as follows: After twenty-four hours, there appears at the site of injection an erythema about six to ten mm. in diameter, paler in color towards the periphery, with a distinct infiltration slightly raised above the skin level in the centre. The erythema lasts but a few days, but the infiltration spreads to a larger area after ten to fourteen days, becoming distinctly limited in the subcutis and movable on the base, while the skin above is not movable: there is a slight redness over the infiltration. These transitional changes last about three weeks, the infiltration becoming smaller, the skin over it going through a fading discoloration. Finally the infiltration disappears and the skin resumes its usual color. There is little or no temperature during the entire period of reaction. The pathology of the reaction in both the cutaneous and intracutaneous vaccination is probably the same, namely, exudation, proliferation and degeneration, the only difference being that in the intracutaneous vaccination, the prolifieration predominates.

In reviewing the whole process of vaccination in the intracutaneous method, we can distinguish two reactions. The first reaches its height within twenty-four to forty-eight hours after injection; the second takes place between the tenth and the fourteenth day after the complete disappearance of the first reaction and lasts about three to four weeks. It is this second reaction that confers the immunity.

Since the publication of Leiner and Kundratitz's article, this method has been tried in a number of clinics and in private practice with uniformly gratifying results. Curt Frankenstein reported that it had proved especially valuable in the vaccination of infants, and published on account of the treatment of sixty very young infants by intracutaneous vaccination. The first reaction expressed itself in a firm, sharply circumscribed infiltrate with an intensive central reddening which was markedly enlarged by the fourth or fifth day. This area was hard, very sensitive to pressure, and movable on the substrate. By the fifth day there was enlargement of the axillary glands but the reaction began to subside by the ninth day following injection. In only one case was there softening of the infiltrate; in another, a small pustule formed at the site of injection, leaving a scarcely visible scar after healing.

Twyman, of Missouri, employed intradermic vaccination upon six hundred and twenty patients, three hundred and ninety-seven of whom had not been previously inoculated by any method. On twenty-three persons, who said they had had smallpox, the intradermic vaccination "took." The typical fully developed reaction, following the employment of this method, is an umbilicated pustule which appears about four days after the injection. Most of the cases showed a slight scar, the size of the original wheal raised at the time of the primary injection.

Twyman regards this method as vastly superior to the old scarification inoculation but his results do not compare very favorably with those obtained by Leiner and Kundratitz and others who have adopted their technic.

The confusion often existing in the minds of many physicians between the endermic and intradermal method of inoculation, is noted by Fred S. Spearman, of Colorado, when describing the technic which he employed for subcutaneous injection as a substitute for vaccination by scarification, which is substantially the same as that used abroad. Among thousands of soldiers and children, vaccinated by this method, he had no cases of infection, and the majority of the patients experienced little or no inconvenience. He cites, as special advantages of this method, the rapidity with which a large number may be vaccinated, the avoidance of external scars, and its adaptation to the treatment of children or the insane and feeble minded, who are likely to disturb the healing of the usual vaccination "sore."

At the clinic of the Bronx Hospital, we have practically carried out the technic of Leiner and Kundratitz, using for each case the contents of two capillary tubes of vaccine supplied by the Board of Health. The vaccine is emptied into the barrel of a syringe to which is added ten drops of sterile water. The piston is then inserted and the whole mixture vigorously shaken to disolve all particles and then injected into the skin of the left arm on the usual site.

In conclusion, we can say that vaccination lends itself to three methods of procedure:

1. Cutaneous vaccination by scarification.
2. Subcutaneous vaccination.
3. Intracutaneous vaccination.

Of all the enumerated methods, the intracutaneous holds out, in palapable manifestation, the greatest advantages.

1. It does away with the usual ugly scar incident to scarification.
2. It minimizes constitutional reaction.
3. It eliminates the possibility of secondary infection, also the possibility of conveying the virus, by the fingers of the child, from the vaccination into its eyes, a not infrequent sequel to the present form of vaccination.
4. It would induce parents to vaccinate children throughout the year instead of limiting it to the seasonal period of warm weather.
5. There is no doubt that vaccination would become more universal in its adoption, in view of the fact that the staring hideousness of a festering wound would be eliminated.

It is surprising that while medical men have been keenly alive to the improvement in the minutest physiological tests and allergic data, which at best serve only a theoretical interest rather than a clinical usefulness, they have shown an utter indifference to the constructive betterment of one of the first methods which formed the basic principle of immunology. We vaccinate today in the same manner as our predecessors did a century ago; the same needle, the same scarification, the same deforming scar, the same invitation for reinfection; all of which bear the insignia of antiquity. True, that where large groups are to be vaccinated, the old method by scarification might be more expeditious, because of its ease and simplicity; but speed and simplicity should not determine the choice of a method when the outstanding features of another proclaim its superiority. Indeed, every effort should be made to facilitate the adoption of this method which is neither a fad nor a fancy, but a method of substantial practicability whose efficacy has been definitely established by clinical evidence and experimental data.

A uniform dilution could easily be fixed and put up in ampoules in a suitable form for immediate use by the general practitioner. In this way, intracutaneous vaccination would soon gain the preference it deserves and thereby replace an antiquated procedure of many disadvantages.

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Two Cases of Botulism*

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On December 30, 1923, Mr. L. and Mrs. H. had dinner at the home of a friend in Plainfield, N. J. There were ten people at the dinner, three of them children. The dinner consisted of fresh chicken, soup, Jell-O, canned squash and icecream. Everyone partook of all the ingredients of the dinner except the squash, which was eaten by only four of the party. Among those four were the two patients and a sister of the female patient. The sister, who resides in New York City, had only a few mild symptoms, according to her physician. On December 31st, the patients began to have malaise, and loss of appetite. That day they had nothing to eat but freshly made soup. The woman became quite ill that night with vomiting and diarrhea. On January 1, 1924, the man also began to vomit and that day both patients complained of weakness, diplopia, blurred vision and vertigo. They were under the care of their family physician until January 3rd, when they were advised to go to the hospital for observation and treatment.

On admission the patients were obstinately constipated but had no vomiting. They complained of weakness, diplopia, difficulty in speech and inability to swallow. The mucous membranes of the mouth and throat were dry and there was a nasal sound to the voice. When they attempted to swallow, they became cyanosed and the fluid regurgitated through

*Read at the clinical conference of the Bayonne Hospital, Bayonne, N. J.

the nose. The pupils were dilated and reacted sluggishly. The man's temperature was subnormal, 97° F., while the woman's was 101.4° F. The pulse and respiration were increased in both cases. Uranalysis showed traces of albumin and fine hyaline casts. The urine was cloudy and of higher specific gravity than normal. The blood count showed a decreased number of erythrocytes and an increased number of leucocytes. The polymorphonuclear count was also slightly increased. On examination, the feces was negative except for numerous gram negative and gram positive bacteria. The diagnosis was botulism.

Treatment consisted of gastric lavage, polyvalent botulinus antitoxin (thirty c. c. intravenously), calomel one quarter grain every fifteen minutes for eight doses followed by magnesium sulphate one ounce two hours later, high colonic irrigations every four hours, milk eight ounces and water sixteen ounces every four hours, and strychnine one sixtieth of a grain every three hours hypodermically. Owing to the extreme dysphagia, the fluids were passed into the stomach by means of the stomach tube, but this caused gagging and cyanosis and had to be discontinued. Murphy drip of glucose and sodium bicarbonate five per cent. was given instead, supplemented by nutrient enemata consisting of one egg, eight ounces of milk, and one half ounce of whiskey given every four hours. Cathartics were given frequently.

On admission the patients were very weak and in rather poor condition. After administration of the antitoxin and thorough cleansing of the gastrointestinal tract, the patients showed some improvement and were much brighter. Four days after admission they were able to swallow a little fluid and the eye symptoms began to clear up. Five days after admission the patients were able to take liquid diet and the nutritive enemata were discontinued. On the seventh day the patients were able to take soft diet. On the thirteenth day, they were allowed to get out of bed, but were still quite weak; and on the sixteenth day, they were discharged. The patient whose symptoms came on later, showed more severe symptoms and made slower progress to recovery.

Stool cultures were made under strict anaerobic conditions on meat infusion broth and glucose agar. A suspension of the stool in normal saline was heated to 60° C. for one hour and then the cultures were inoculated and incubated at 37.5° C. for ten days. Smears were made and stained with gram stain. The culture showed formation of much gas of a very disagreeable odor. The stained smears showed Bacillus botulinus with spores. This finding was corroborated by the United States Public Health Service. Guineapig inoculation with the supernatant fluid of the centrifugalized meat infusion broth cultures were made and control animals were inoculated with sterile meat infusion broth.

The first inoculation consisted of one and a half c. c. of culture and a corresponding amount of meat infusion broth for the controls. After twenty-four hours the guineapig which was inoculated with the culture showed some malaise, while the other showed no reaction. These animals were reinoculated with two and a half c. c. of culture and control broth respectively as before. At the end of seven hours, the experimental animal showed loss of appetite and general weakness. At the end of fifteen hours, there was paralysis of the lower extremities and gradually the entire lower part of the body became paralyzed. The animal took no food and lay motionless even when turned upon its back. Ptosis of the eyelids was also observed. Death occurred in twenty-seven hours; probably from paralysis of the diaphragm. All this time the control animal showed no reaction, the appetite and general activity being normal. Postmortem findings on this guineapig showed the stomach dilated and full of foul gas with a slight amount of partly digested food taken a few hours after the second inoculation. The cecum was also distended with gas and contained a great deal of fecal matter. The heart showed a rightsided congestion, especially of the right auricle. The bloodvessels in all the organs were markedly injected. Sections were made of the heart, lungs, liver, spleen, and kidney. These sections showed degenerative processes in the heart, liver, and spleen. The lungs were congested with blood. The kidney was normal and no organisms were found. Part of the spleen and liver were rubbed with saline solution and incubated overnight at 37.5° C. Cultures from this suspension were made on meat infusion broth under anaerobic conditions and incubated at 37.5° C. for eight days. This culture was centrifugalized and four c. c. of the supernatant liquid was injected into a guineapig. Another four c. c. of this culture was heated at 80° C. for a half hour to inactivate it and was then injected into a second guineapig. A third animal injected with four c. c. of a pure sterile meat infusion broth. Three and a half hours after injection, the animal which was inoculated with the inactivated culture developed convulsions and died. Postmortem examination of this animal showed one large and multiple small abscesses of the liver. These had probably existed before inoculation and were the cause of death. The other two guineapigs were symptomless after forty-eight hours.

DISCUSSION

Most of the workers on this subject have found that the toxin is inactivated by heating it at 80° C. for half an hour and that it cannot be formed in warm blooded animals. The results of the second series of inoculations convince us that our findings correspond to those of previous investigations. We also believe that the toxin ingested by the patients was not of a very virulent type because the symptoms cleared up in a short time. This may, however, have been facilitated by the early administration of the antitoxin. The fact that the guineapig first inoculated with the original culture did not show any marked symptoms until a second and much larger dose was administered, tends to strengthen our belief that the toxin was not very virulent, that in all probability the illness of the patients was brought on by eating the squash which was improperly canned at home. We were unable to demonstrate the toxin or the organism causing it in the squash because the original jar which was used at this dinner was not available for experimental purposes.

We are indebted to Miss E. F. Paul, our laboratory technician, for her careful work in aiding to clear up the diagnosis in these cases.

Primary Malignant Tumors of the Liver

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Cohn, of Spokane, Washington (1920), reviews some of the reported cases of primary sarcoma and carcinoma of the liver in his paper on Primary Cancer of the Liver. He states that "primary malignancy of the liver is a very rare condition. The number of instances of this disease is very small." My study of the entire literature of the world on the subject, and after a thorough search, leads me to believe that the authentic cases of primary cancer of the liver is much greater in number than those of sarcoma. I have collected fifty-nine instances of undoubted primary sarcoma of the liver. There are probably not more than two hundred or two hundred and fifty true instances of primary hepatic cancer on record in the literature. Cohn mentions cases of hepatic malignant diseases reported by Dickenson, Hale White, W. W. Ford, Wheeler, Muir, M. De Massary, Rohdenburg, J. B. Cleland, Delepine, Pepper, Heaton, Pitt, Wallstein, Freeman, Castle, Acland, Tate, Affleck, Roberts, Bramwell, La Page, Lewis, Yeomans, Williams, Perry, and Schlimpert. He includes a list of sixty-nine references on the subject. In view of the fact that primary malignancy of the liver is a rare condition I thought it worth while to add a report of twelve cases, and to review briefly the literature on the subject. While cancer of the liver in general is common, primary cancer is certainly most unusual. Thus, Hale White found at Guy's Hospital 244 cases of cancer of the liver from 1888 to 1906, forty-five cases of liver abscess, and forty-three of hydatid diseases. In 9,500 consecutive postmortems there were 361 examples of secondary malignant disease of the liver, and of these at least 330 were cancer. So 3.47 per cent. of all the people who die in Guy's Hospital have carcinomatous growths in the liver. H. D. Rolleston found that of seventy-six cases of secondary malignant diseases of the liver, the primary seat was in the stomach in twenty-four, in the colon in twelve, in the esophagus in ten, and in the pancreas in eight. It was primary (in Rolleston's series) in the gallbladder in five.

Ribadeau-Dumas and de Laulerie (1920) (12) reported a case of slow adenocarcinoma of the liver, which had run for five years.

Van Sweringen (1910) reported a case of sarcoma of the liver and stomach in a woman aged sixty years. No other metastases were found in the body. The liver was extremely large. However, it was considered by Lamb that the sarcoma in this case may have been primary in the stomach.

Up to November, 1901, there have been about fifty cases of probable primary sarcoma of the liver recorded in the literature. Of these thirty are without doubt true primary tumors of the liver.

Primary carcinoma with cirrhosis of the liver is not so rare as formerly thought. Sarcoma with cirrhosis of the liver is much rarer. Recently Dr. Alfred Stengel (1921) had a case of primary carcinoma of the liver with cirrhosis in an adult male. Finley and Adami reported a case with this combination. Fussell and Kelly (1895) reported two cases of a similar nature. Sotti, Thomson, Rispal, Thorel, Tollemer, Travis, and others have also reported cases of primary carcinoma of the liver with cirrhosis. Dr. Napoleon Boston had a case with this combination in the Philadelphia General Hospital.

W. W. Ford reported a case of primary sarcoma of the liver with cirrhosis which occurred in the Montreal General Hospital. The patient was a man aged fifty-nine years. There was a combination of an extreme grade of cirrhosis of the liver with a large sarcomatous mass in the right lobe, and a number of secondary nodules scattered throughout the peritoneal cavity.

PRIMARY CARCINOMA OF HEPATIC DUCT AND REGION OF FISSURE OF LIVER.

CASE I.—John Y., white, adult male, aged thirty-eight years. In January, 1920, he became jaundiced. Complained of pain and discomfort in the epigastric region. Severe itching kept him awake. The liver and gallbladder region was distinctly tender. The liver was enlarged. At first it appeared to be a case of catarrhal cholangitis following an attack of indigestion. The patient had, a week before he was seen, what he called a "spell of indigestion," which was followed by slight "yellowness of the skin." However, he rapidly became worse, the itching was very distressing, and he became more deeply jaundiced.

He was seen by Dr. D. Riesman, of Philadelphia, who at first thought he had a pancreatic tumor. I advised the man to be operated on, as did also Dr. Riesman.

The laboratory findings showed bile present in the urine, .7 per cent. urea; hyaline and granular casts present; specific gravity, 1.015. The blood showed 3,520,000 red blood cells; 60 per cent. hemoglobin; 80 per cent. polymorphonuclears; 15 per cent. lymphocytes; 5 per cent. large mononuclears. On January 30, 1920, the x ray taken by Dr. Roberts, was negative for tumor or stones. The liver extended a hand's breadth below the costal margin. The blood urea showed 10 mgms. per 100 c. c. blood. The phthalein renal function test was unsatisfactory, because of the bile in the urine. I suspected a probable malignant growth of the gallbladder and liver. The blood Wassermann was negative. On March 25, 1920, Dr. John B. Deaver performed a laparotomy at the Lankenau Hospital and found a primary carcinoma of the hepatic duct extending into the fissures of the liver. The patient died April 8, 1920, the day after he came home from the hospital, or about three months after the beginning of his illness. The remarkable fact was that his appetite was extraordinarily good during the entire period of his illness, and his gastric symptons were

comparatively slight. He did not suffer, except from the severe and distressing itching, due to the marked jaundice. He had no fever at any time. His pulse was 64-72.

CASES OF CARCINOMA OF THE LIVER AND BILE DUCTS.

Case II.—Autopsy No. 1904-129. June 14, 1904, Philadelphia General Hospital, University of Pennsylvania Autopsy Records, 1904, Vol. X, p. 43. Mary Jane F., aged seventy-four years. Admitted May 11, 1904; died June 13, 1904. Service of Dr. David Riesman. Autopsy performed by Dr. Alburger. The clinical diagnosis was phthisis pulmonalis, carcinoma of the liver. The anatomical diagnosis, carcinoma of head of pancreas and liver; chronic parenchymatous nephritis (left); tuberculous pyonephrosis (right); hemorrhagic enteritis; arteriosclerosis. The histological summary: Carcinoma, probably originating from the bile ducts and cirrhosis of the liver; fibrosis of the spleen; fibrosis (perilobular) of pancreas; chronic interstitial nephritis; slight fibrosis of adrenal. The stomach was small, mucous membrane thick and covered with mucus. The duodenum: below the papilla was a large ulcer four cm. broad, by 1.5 cm. long, with elevated thickened and hyperemic edges; depressed, yellowish, bile-stained centre. The small intestines, were normal throughout. The appendix showed no gross change. The common bile duct was involved in the carcinomatous process. The liver weighed 2450 gms. It was firm; covered by yellow nodules, supplanting the greater portion of hepatic structure, especially of the right lobe. The report by Dr. Loeb showed carcinoma of the glandular type in the liver, many mitoses, some increase of connective tissue in liver, probably carcinoma originating from bile ducts. The pancreas showed increase of connective tissue, especially perilobular; increase in size and number of the islands of Langerhans; round cell infiltration in the connective tissue; around the large ducts polynuclear leucocytes.

Case III.—Autopsy No. 1904-209. August 10, 1904. University Hospital, University of Pennsylvania Autopsy Records, 1904, Vol. X, p. 398. Maggie R., aged fifty-four years. Admitted July 13, 1904; died August 19, 1904. Service of the late Dr. J. William White. Autopsy performed by Dr. Coca. The clinical diagnosis was phlebitis; carcinoma of pylorus and liver. The anatomical diagnosis, cholelithiasis; carcinoma of liver (primary seat not discovered), extension to peritoneum, and mesenteric lymph glands; general arteriosclerosis; vegetative endocarditis (tricuspid and aortic) Histological summary: Infiltrating adenocarcinoma of bile ducts (carcinomatous cirrhosis) and slight fatty infiltration of liver; fibrosis of pancreas. Cancerous infiltration of abdominal lymph glands and of adrenal. Chronic interstitial splenitis; fibrosis and congestion of lungs.

The patient complained of pain in the right hypochondrium, a constant dull ache. The urine was negative. July 15, 1904, white blood cells, 15,240. July 25, 1904, white blood cells, 20,520, hemoglobin 75 per cent. The liver weighed 2220 gms. and measured twenty-six by twenty by twenty cm. On section the liver presented a mottled appearance. There were many nodules, firmer than the surrounding tissue and of a lighter color, showing almost no evidence of necrosis.

The cancer was of a tubular adenocarcinomatous type, apparently, from its similarity to the bile ducts having its origin in these. The relatively large amount and dense character of the fibrous stroma of the growth marked it as essentially a hard cancer. It would be classed with either the form of biliary cancer spoken of as Perl's infiltrating carcinomatous cirrhosis; or as the form arising from the larger gallducts and infiltrating the capsules of Glisson. In the sections examined the capsule was normal. The pancreas exhibited marked areas of interlobar cirrhosis, with here and there interacinous fibrosis of the same type.

The spleen had fibrosed trabeculæ and vessels, capsule was normal. In many instances the thickened vessel walls had become hyaline. The cancer in one of the adrenals was identical in type to that in the liver.

PRIMARY CIRRHOTIC BILIARY CARCINOMA.

Case IV.—Autopsy No. 1885-1908-7. January 12, 1908. University Hospital, University of Pennsylvania Autopsy Records, Vol. XVI, 1908, p. 26. Service Dr. J. B. Carnett. Autopsy performed by Dr. H. T. Karsner. Martha W., white. The anatomical diagnosis was biliary carcinoma; metastases to subhepatic glands and right adrenal; general jaundice; acute splenic tumor; chronic diffuse nephritis. The histological diagnosis, primary cirrhotic biliary carcinoma of the tubular type; chronic congestion of the spleen; chronic interstitial nephritis with implantation of acute parenchymatous. The patient was complaining of increasing loss of flesh followed by a gradually oncoming general jaundice for a period of several months. She had a hemorrhage and after operation, the bleeding continued up to the time of her death four days later.

The liver (pathological museum No. 217) weighed 2320 gms., measuring twenty-eight, by twenty-three, by 7.5 cm. It showed prolongation of a sharp anterior edge, the edge itself was of normal sharpness. In the right lobe was a large tumor mass, the mass was not sharply outlined but faded away into the hepatic tissue with almost no signs of pressure, apparently replacing the parenchyma. The tumor was grayish yellow in color with some pinhead points centrally placed of a deep yellow color with a peripheral zone of hemorrhagic points varying from bright red to a deep blue color. The consistency of this mass was somewhat firmer than that of the liver tissue and approximated that of hard rubber. The gallbladder was of about normal size. The cystic duct, common duct, and the hepatic duct were patulous. The ampulla showed a small soft gallstone, but showed no obstruction to the flow of bile through the duct at the postmortem examination. The glands of the transverse fissure were enlarged, hard and on section were found completely filled by a mass of tissue yellow gray in color, of a consistency similar to that of the liver tumor. The right adrenal was much enlarged and thickened, and showed posteriorly a mass corresponding to the mass of the enlarged glands.

The spleen showed slight thickening of trabeculæ and capsule, pulp shows normal elements.

PRIMARY BILE DUCT CARCINOMA OF THE LIVER.

CASE V.—Autopsy No. 1909-24 (2450). March 18, 1909. Philadelphia General Hospital. University of Pennsylvania Autopsy Records, Vol. XVIII, 1909, p. 99. Service of Dr. Henry. Autopsy by Dr. H. T. Karsner. Charles C., aged forty-nine years; male, white. Admitted to hospital January 28, 1909. Died March 17, 1909.

The clinical diagnosis was hypertrophic cirrhosis of liver; ascites.

The gross anatomical diagnosis: Metastatic carcinoma of lungs and pleura; cloudy swelling of myocardium; primary carcinoma of liver, infarcts of spleen; secondary cancer in left kidney and retroperitoneal lymph nodes and of pancreas. The histological diagnosis: Passive congestion and tumor metastases of lung, edema. Slight chronic interstitial myocarditis, infarct of papillary muscle; primary bileduct carcinoma of liver; chronic fibrous splenitis and perisplenitis, anemic infarct of spleen. Subacute parenchymatous nephritis and tumor metastases.

The liver weighed 3300 gms., measured twenty-eight by twenty-three by eleven cm. It was firm and abnormally rounded. The liver substance was seen through the transparent capsule to be studded with innumerable grayish yellow nodules with umbilicated surface, generally rounded, discrete and confluent, varying in size from a diameter of one mm. up to four cm. The organ cut with moderately increased resistance. The uninvolved liver tissue was small in amount. The gallbladder was normal. The pancreas showed a metastatic nodule in its head, which was partially encapsulated by fibrous tissue. Microscopically, the liver capsule was thickened by an overgrowth of dense fibrous tissue. The capsule of Glisson shows a wellmarked fibrous tissue overgrowth and some lymphocytic infiltration. The veins were moderately congested and the arteries showed slight thickening of their walls. The epithelial cells were columnar in type and arranged in the form of irregular tubular or acinous masses, either solitary or continuing toform large infiltrating areas. The cells corresponded closely to those of the bile ducts, being low columnar, only moderately acidophilic, and with relatively small circular vesicular nuclei. Considerable variation was noted in the character of the epithelial cells of the proliferating masses. The tumor as a whole showed few karyokinetic figures. Fibrosis about the central vein could be seen but no congestion was noted.

CASE VI.—Autopsy No. 56-1909. April 14, 1909. Philadelphia General Hospital, University of Pennsylvania. Autopsy Records, Vol. XVIII, 1909, p. 238. Service of Dr. Sykes. Autopsy by Dr. H. T. Karsner. Frederick H., aged fifty-three years, white. Admitted to hospital April 12, 1909; died April 14, 1909. The gross anatomical diagnosis was tumor metastases in lungs; chronic adhesive pleurisy; primary cancer of bileducts and liver (with atrophic cirrhosis). Acute splenic tumor; arteriosclerotic kidneys, chronic interstitial nephritis, tumor metastases in prostate and mediastinal retroperitoneal and mesenteric lymph glands. The histological diagnosis: Tumor metastases in lungs, passive congestion and edema. Tumor metastases to diaphragm, prostate, and lymph glands. Chronic interstitial splenitis, chronic interstitial pancreatitis, chronic interstitial nephritis; primary cancer of sclerotic type of bileducts and liver. Atrophic cirrhosis of liver.

The liver weighed 2700 gms., measured thirty-one by eighteen by nine cm. The surface was markedly irregular and nodular, adherent to omentum. Many nodules of yellowish appearance showed through the capsule, others showed a dark red color, none showed umbilication. The organ cut with increased resistance and in the right lobe marked atrophic cirrhosis was present. The left lobe was enormously enlarged and showed little remaining liver tissue. Cross section showed necrotic nodules varying from a diameter of one mm. to five cm. The edges were not sharply outlined and tended to fuse with irregular bands of connective tissue about them. The gallbladder showed a normal mucosa and patulous ducts. The pancreas, was seventeen cm. in length and embedded in a mass of enlarged lymph nodes from which it could be separated with difficulty. Subhepatic and retroperitoneal lymph nodes showed enormous enlargement. The spleen weighed 200 gms., measuring 15.5 by ten by three cm. The stomach, duodenum, intestine contained nothing of importance. The mediastinal lymph nodes were enlarged and contained metastatic nodules. The liver microscopically showed an enormous fibrosis. The capsule and capsule of Glisson both apparently taking part in this, and marked proliferation of the bileducts was found. Large cell masses such as seen in the lungs were numerous and intermediate in size between these large masses and the smaller bileducts could be found all grades. In the lungs were seen large masses of epithelial cells; these were markedly irregular in size and shape, and showed irregularity in position.

PRIMARY CARCINOMA OF THE LIVER WITH CIRRHOSIS.

CASE VII.—6852-1920-412. November 11, 1920. Autopsy Records, University of Pennsylvania. Prof. Alfred Stengel's Service at University Hospital. Autopsy by Dr. J. Eiman. Charles V. V., Admitted to hospital November 8, 1920. An elderly white man, measuring 195 cm., and weighing 200 pounds. Blood urea—nitrogen 46 mgm. per 100 c. c. Phenolsulphonephthalein elimination was 65 per cent. in two hours. He vomited large amounts of bright red blood. The patient died November 10, 1920. The clinical diagnosis was cirrhosis of the liver. The gross anatomical diagnosis: Carcinoma of the liver —primary, with metastasis to glands in gastrohepatic omentum, myocardium, right kidney, bronchial glands. Laennec's cirrhosis of the liver; varicosities of esophageal plexus of veins causing massive hemorrhages; parenchymatous myocarditis, fatty degeneration and dilatation; metastastic cancer right pleura; passive congestion and edema of lower lobes of lungs; spleen, chronic interstitial splenitis, and passive congestion; atrophy with fat replacement of pancreas; cloudy swelling of kidneys; moderate arteriosclerosis. The common duct was patulous. The liver weighed 2170 gms., measuring twenty-eight by twenty-two by nine cm., typical hob nail edges and round. In the central part of liver was a tumor mass, the size of a lemon, irregular, not circumscribed, and showed no evidence of encapsulation. It cut with increased resistance and was yellowish white in color, with small irregular reddish

areas. There were apparently no other tumor masses in the liver. The glands around the neck of the gallbladder and in gastrohepatic omentum were enlarged, the largest one being two cm. in diameter; they were similar in appearance to the tumor in the liver. The gallbladder showed a uniformly thickened wall. The mucosa was bile stained, but smooth. It contained watery, pale amber colored bile. The pancreas showed no evidences of neoplastic growth, neither did the stomach and adrenals. The spleen weighed 840 gms., measured twenty-five by fifteen by four cm. The surface showed *Zuckerguss* patches. The capsule was slightly wrinkled. The organ was leatherlike in consistency. The pulp was very firm. The left kidney weighed 250 gms., measured 15.6 by 7.5 by four cm. The right kidney weighed 260 gms., measured fifteen by eight by three cm. Showed a small metastatic nodule in the cortex. In the diaphragm were embedded small metastatic nodules, the largest one about four mm. in diameter. The lower fourth of the lower lobe of the right lung showed numerous firm whitish nodules, varying in size from a pinhead to a split pea. They were attached firmly to the pleura and did not penetrate into the lung tissue. The endothelial surface of the diaphragm showed similar nodules. The heart showed a moderate right sided dilatation; sixteen by sixteen by 4.3 cm., and weighed 400 gms. It is very flabby. In the wall of the left ventricle there was embedded a firm whitish spherical node about five mm. in diameter. The endocardium showed no gross lesions. The bronchial glands were markedly enlarged, and the lymphoid tissue was almost entirely replaced by neoplastic growth. The largest lymph node measured 1.5 cm. in diameter. They were firm, and cut with increased resistance. The mesentery was thick, but showed no glandular enlargements.

PRIMARY BILIARY CANCER.

Case VIII.—No. 213, page 22. Vol. II. Records of Pathological Histology, University of Pennsylvania. (Dr. H. W. Cattell.) Examined by Professor Allen J. Smith, May 31, 1904. Mrs. H. A diagnosis of soft cancer (cylindrical cell epithelioma) of liver and lymph gland was made. The growth had its origin in the gallducts, probably at the site of the large degenerate node.

Professor Smith in his description states the type of cells is probably primarily a cylindrical epithelium; but only in picked places is this clear. For the most part the cells are larger and rounder or more irregular than ordinarily seen in a true cylindrical cell epithelioma. They are full of cell inclusions, and often are highly suggestive of sporozoan figures, but the examiner was unwilling to declare for such a nature of growth although recognizing its suggestive features. In some respects too the appearances are strongly suggestive of the hypernephromata, although the cells are scarcely large enough and contain too few of the droplets or tiny vacuoles so common in such tumor cells. There is insufficient definite relation with the vessels to permit the diagnosis of an endothelioma or perithelioma of vascular origin. The most reasonable diagnosis in the examiner's mind is that of a soft cancer of the nature of a cylindrical cell epithelioma, arising from some tubular type of gland structure. In the absence of other known seat of primary tumor, taking into consideration the size of the hepatic node and the appearance of some of the tumor tubules seen especially in the infiltration of the capsule of the hepatic node, it may be suggested that the growth had its origin in the gallducts probably at the site of this node.

PRIMARY SARCOMA OF THE LIVER.

Case IX.—4178—1913—63. April 29, 1913. Autopsy Records, University of Pennsylvania. Autopsy by Dr. Lynch. Service of Dr. Ashton, Philadelphia General Hospital.

Charles K. White, male, aged thirty-eight years. The gross anatomical diagnosis was chronic aortic and mitral valvulitis, acute vegetative aortic endocarditis; chronic apical tuberculosis, passive congestion and edema both lungs; acute splenic tumor, parenchymatous and fatty degeneration of the liver; parenchymatous degeneration of pancreas; arteriosclerosis; chronic fibrosis serositis, peritoneum, pleura and pericardium; loculated purulent peritonitis with communication with psoas muscle and liver abscess. The histological diagnosis was chronic fibrous epicarditis, myocarditis and endocarditis, parenchymatous degeneration; croupous pneumonia, chronic fibrous pleuritis; chronic fibrous splenitis (interstitial), chronic fibrous capsulitis, with passive congestion. Chronic fibrous capsulitis with early portal cirrhosis of the liver, organizing abscess, spindle cell sarcoma arising from the wall of a chronic abscess; parenchymatous and fatty degeneration of the liver; chronic interstitial nephritis, arteriosclerotic type, parenchymatous degeneration and passive congestion of the kidneys (bilateral nephrolithiasis). The spleen weighed 250 gms, measured sixteen by eight by 3.5 cm., thick, fibrous ragged capsule; soft, dark red and diuent pulp. The bacteriological examination of the abscess: spreads—Bacillus diphtheria, Bacillus coli, pneumococcus; tubercle bacillus not found. Liver: diplococcus, Bacillus coli. The spleen: negative. Cultures: abscess: Bacillus diphtheriæ, diplococcus, Bacillus coli. Liver: staphylococcus, diplococcus, Bacillus coli and diplococcus.

The body was that of an adult white male with kyphosis in the lumbar and lower thoracic vertebra, barrel chest, small stature, protruding abdomen, slightly emaciated. The pancreas was normal in size, pale, soft, and lobules indistinct. The adrenals were nodular, yellowish cortex, very soft, reddish medulla. The heart weighed 300 gms., no metastatic nodules; surface is rough and fibrous, showing numerous petechial hemorrhages; myocardium of normal thickness, pale and flabby. The liver weighed 1,650 gms, measuring thirty-five by nineteen by eight cm. with an abscess cavity on the under surface of the left lobe. The capsule was enormously thickened. One portion of the section from abscess wall was composed of masses of young, spindleshaped cells, running in an irregular fashion, practically no intercellular substance, with active hyperchromatic and mitotic nuclei, large numbers of endothelial lined blood channels, there was no capsule. Penetrating directly in the inner portion of the section was a mass of young and old fibrous connective tissue, well formed congested bloodvessels and one portion of the section showed extensive degeneration and necrosis. The spindle cell sarcoma was primary in the liver in this case. No metastases were present anywhere else in the body.

PRIMARY CARCINOMA OF THE LIVER.

CASE X.—Autopsy No. 144; 1902. June 4, 1902. University of Pennsylvania Autopsy Records, Vol. VII, p. 345. Autopsy performed by Dr. W. T. Longcope. Blockley Hospital. J. A. Death occurred on June 3, 1902. The clinical diagnosis was hepatic carcinoma. The anatomical diagnosis: Primary carcinoma of liver, with metastases to retroperitoneal lymph glands; occlusion of cystic duct; dilatation of gallbladder; interstitial splenitis and nephritis; chronic pulmonary tuberculosis, acute bronchopneumonia, general icterus. The body was that of an old emaciated man.

The liver weighed 4,780 gms.; enormously enlarged, measured thirty by thirty-two by twelve cm. The surface was covered with old tags of fibrous tissue; when these were removed the entire liver was found to be studded with yellowish gray nodules measuring from two mm. to 1.5 cm. in diameter; these were placed very closely together and the largest ones which showed a pinkish periphery, present a contracted scarlike appearance. The general surface of the liver between these nodules was of a mottled olive green. All the lobes on both anterior and posterior surface presented this same knobbed appearance. The gallbladder was much enlarged, elongated and measured 15.5 cm.; near its tip the wall were thickened and there is a slight constriction. The cystic duct as it left the gallbladder was blocked by a large stone the size of a marble; directly adjacent to this there was an enlarged lymph gland about the same size. On section of the liver, the surface was irregularly lobulated and studded like the capsule with firm yellow and red nodes projecting from a brilliant green surface; these projections were frequently round and quite regular, the centres being a brilliant opaque yellow and the peripheries a fairly deep red. There was no softening to be found anywhere. Esophagus, stomach, intestines, adrenals, prostate, testicles, seminal vesicles, rectum, pericardium were apparently normal.

The lower border of the pancreas was adherent to a firm mass about the size of a walnut; this mass was bound to the pancreas and to the retroperitoneal tissues by firm adhesions but appears distinct from the pancreas. On section it has a mottled yellow and gray appearance, firm yellow areas frequently being surrounded by irregular hemorrhagic zone. The retroperitoneal glands were somewhat enlarged; those about the common bile duct showed the greatest increase in size; they were firm and on section appear similar to the gland attached to the pancreas. None of them were more than two cm. in diameter. The spleen weighed 110 gms., deep purplish red color; small, firm; on section pulp is deep red and increased.

PRIMARY CARCINOMA OF THE BILE DUCTS.

CASE XI.—Carcinoma of the liver, and secondary carcinoma of the pancreas. Autopsy No. 119—1908—2135. Vol. XVII, p. 70. University of Pennsylvania, Autopsy Records. Autopsy performed by Professor Allen J. Smith, June 14, 1908. Service of Dr. L. Napoleon Boston, Philadelphia General Hospital, Philadelphia. E. S. Admitted to the hospital May 11, 1908, died June 13, 1908.

The clinical diagnosis was carcinoma of bile ducts (primary) carcinoma of liver; secondary carcinoma of pancreas (?). The gross anatomical diagnosis: Primary carcinoma of gallbladder with extension to liver and metastatic involvement of gastrohepatic glands; cholelithiasis, obstructive jaundice; follicular hyperplasia of the spleen; nephrolithiasis; aortic sclerosis and atheroma. The histological diagnosis: Chronic interstitial pneumonitis, miliary tubercles (?) of lung, chronic tuberculous peritracheal lymph adenitis, cardiac hypertrophy and chronic interstitial myocarditis; primary cancer of gallbladder with extension to liver; chronic interstitial nephritis; extension of cancer to right adrenal gland.

On appearance the body of a white woman, past middle life, five feet in height, weighing approximately 125 to 130 pounds, with marked jaundice. The spleen weighed 240 gms., nonadherent, roughly quadrate in outline, measured eighteen by eight by five cm. The organ was of a gray slaty color, normal consistence. The liver weighed 2,400 gms., measured twenty-eight by twenty-four by eight cm. It presented numerous bulging yellow nodules on the upper and lower surface; organ was olive in color; capsule smooth and transparent (small area of sclerotic thickening in vicinity of tumor nodule), and seen through the capsule the lobules could be made out as yellowish points with intervening lines of darker color.

CONCLUSIONS AND SUMMARY.

1. In a study of the literature of the world, the autopsy records of the University of Pennsylvania, reports from hospitals, clinicians, and surgeons in all the large medical centres of the United States, I have been able to collect the following cases: primary sarcoma of the liver, fifty-nine; primary sarcoma of the pancreas, twenty; primary sarcoma of the gallbladder, sixteen; primary sarcoma of the esophagus, thirty-eight; primary sarcoma of the tongue, sixty-six; primary sarcoma of the stomach, 266, 139 of the small and large intestines; eighteen of the appendix (including my own case); sixty-six of the spleen and 125 cases of primary sarcoma of the thyroid gland. Six cases of intestinal sarcoma I hesitated to include in my list of 139, and six cases of esophageal sarcoma were not included in my list of thirty-eight, because of some doubt as to the primary origin of the growth. In other words, after a careful search of the literature, I was able to collect about 813 cases of primary sarcoma in the entire alimentary canal (including the tongue, esophagus, stomach and intestines), the liver, gallbladder, pancreas, appendix, spleen, and the thyroid gland.

2. There are about two hundred and fifty cases of primary cancer of the liver on record in the literature. I was only able to find fifty-nine cases of primary sarcoma of the liver in the literature.

3. A review of the literature of primary malignant tumors of the liver is given.

4. Cases of primary cancer and sarcoma of the liver are reported.

I wish to express my thanks for the assistance given me by Professor Allen J. Smith, of the University of Pennsylvania, and for his permission to study and review the excellent autopsy records kept by him (1876-1920), and for the privilege to make the notes on the cases herein reported.

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Practical Therapeutics

DIETETIC TREATMENT OF OBESITY*

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Obesity, as generally understood, means a condition of overweight due to an excessive accumulation of fat in the body, and does not include such definite endocrine diseases as myxedema, dystrophia adiposogenitalis and adiposa dolorosa.

The average healthy body contains stored fat amounting to about eighteen per cent. of its weight, but each individual has his own particular, preferred weight, which may differ within moderate limits from the average weight for his height and age without suggesting a pathological condition. This preferred weight he regularly maintains so long as he eats enough, and even when he eats more than enough. Indeed, it is a matter of common observation that healthy persons can maintain a constant weight when eating more food than they require for size, age, temperature and work, and in some cases much more. It would seem as if they got rid of the excess food by speeding up combustion, by exercising reserve functional power.

It is also a matter of common observation that the obese can not eat much more food than they need without storing fat; and it is a natural inference, in view of the fact that basal metabolism in the obese has not been demonstrated to be regularly below that in the healthy, that in the former the particular reserve functional power which has to do with excess combustion, with speeding up combustion in the presence of more food than the body needs, has been encroached on or is congenitally small. The margin between the maintenance diet and that at which deposition of fat begins, which is large in the healthy, is relatively small in the obese. M. Labbé (1) says that the obese increase in weight more easily and reduce in weight with greater difficulty than others. Their luxus consumption, to use Richet's phrase, is less than the average of health.

All cases of obesity are not necessarily due to gluttony, nor are all gluttons necessarily found among the obese. These clinical observations receive support from the studies of Jacquet and Svenson and others, who found in obese subjects normal consumption of oxygen while fasting, but a smaller increase in combustion after eating than in healthy subjects. Also, it has been noted that the obese have greater difficulty in radiating heat than the healthy; which can be explained by the fact that the former are encased in a thicker envelope of fat than the latter.

The treatment of obesity has for its object the burning up of excess fat in the body and the preventing of its reaccumulation. The safest as well as the most effective method of accomplishing this object consists in dietetic regulation and hygiene.

The regulation of the diet has first to do with its fuel value. Assuming that basal metabolism in the obese is normal, and that a person with normal basal metabolism can maintain his body weight by a daily ration of twenty-five to thirty calories to the kilogram of his ideal weight (average weight for height and age) while at rest, of thirty to thirty-five calories while leading a life of little or moderate activity, of thirty-five to forty calories while leading a life of considerable but not great activity, and of forty to forty-five calories while leading a very active life, it follows that the calculation of the caloric value of a reduction diet can be made by subtracting from the caloric value of the maintenance diet the number of calories that could be supplied by the combustion of the body fat which it is desired to remove. The combustion of one ounce of body fat would supply about 250 calories. (One ounce of pure fat would supply 270 calories, but the body fat is associated structurally with some water.)

In this connection it may be noted that in cases of obesity individuals may differ in the residuum of reserve combustion power which they possess, that residuum being in some cases large enough to permit a considerable allowance to be made for it in calculating the fuel value of the reduction diet. There may be different grades of obesity, as there are of diabetes.

While reduction of the fuel value of the diet is essential in the treatment of obesity, indications for regulating the diet in other respects are frequently present. Obesity is often found, not as a simple and isolated entity, but complicated by or associated with other morbid conditions. It has close relationships with disorders of protein and carbohydrate metabolism. Gout and gravel occur relatively often in the obese, and diabetes mellitus develops so frequently in the obese that the prevention of obesity is considered an important prophylactic measure against diabetes. The obese are favorable subjects for chronic nephritis, chronic arthritis and arteriosclerosis. Myocardial disease is a common complication of obesity. In the cases developing in middle and later life, which constitute the majority of the cases, regulation of the diet otherwise than by reduction of its fuel value is usually required.

Most important in the regulation of the diet after reduction of its caloric value, is the determination of the size and character of its protein ration. The specific dynamic action of ingested protein on metabolism in the body is greater than that of either carbohydrate or fat, and consequently a large ration of protein would seem to be indicated for the purpose of speeding up combustion. But the presence of the gouty diathesis of nephritis, or of an undue susceptibility to the toxins which are produced from protein food during its digestion and metabolism, may modify the indication for a large protein ration, and also suggest that the selection of food articles containing protein favor those whose protein is most free from association with undesirable substances and least susceptible to injurious bacterial activity; that is, that this selection be in accord with the principle of the easy diet (2).

In view of these considerations it would seem, in general, that the protein ration in obesity should be

*Read before the American Therapeutic Society, Toronto, June 7, 1924.

somewhat larger than the minimum health ration, in so far as other conditions permit; that in the elderly and in those cases complicated with gout, nephritis, arteriosclerosis and perhaps rheumatism, it should be derived from milk or milk and eggs, in preference to animal flesh, although in many of these cases a certain amount of flesh is permissible; and that in uncomplicated cases occurring in the comparatively young, no special restriction of flesh is called for.

The relative proportions of the fat and carbohydrate in the diet are usually determined by the principle that the fuel deficit should fall chiefly on the fat. The specific dynamic effect of ingested carbohydrate is greater than that of fat, though less than that of protein.

The water ration, except in the case of patients with advanced myocardial disease which requires restriction of fluid, should be large enough for comfort but not excessive. Restriction of fluid does not seem advisable as a general antiobesity measure, although such restriction may to a certain extent and for a time reduce the weight. Obese patients undergoing reduction treatment sometimes seem to retain water in their tissues unduly; also, especially in the beginning of a course of treatment, it would seem sometimes as if the elimination of water was increased.

A patient should not be kept on a reduction diet for long periods without intervals of rest, in which a sufficient or slightly excessive diet is given: the excess combustion power may show improvement after being rested.

It is not advisable to reduce the weight rapidly, and a good general rule is to limit the average weekly reduction to two pounds, which can be accomplished, theoretically, by giving a diet which has a fuel value less by about one thousand calories than the normal fuel requirement, and usually practically by such a diet. In many cases the reduction should be made at a slower rate than two pounds weekly.

It is often necessary to restrain patients who desire to reduce too rapidly, and to make sure not only that they eat no more than what is prescribed for them, but that they eat no less.

The young and the very old should not, as a rule, be subjected to reduction treatment, before the age of twenty practically never, except by the correction of wrong diet, and after fifty with caution, being guided by the condition of the patient. Those entering on old age who have been obese for a long time should not be reduced, and great caution should be exercised in reducing those who have serious diseases, if it is done at all. In any case showing symptoms of distress the rigidity of the diet should be relaxed or a return made to the normal diet. The reduction should not be carried to an extreme degree. A general rule which the author favors is not to produce a reduction of more than twenty-five pounds in the first course of treatment. In obesity complicated with heart disease it is desirable to reduce the weight before there is loss of compensation. When there is edema with obesity and heart disease, reduction should not be undertaken.

The treatment may be begun by giving an arbitrary diet and varying that according to indications, or an attempt may be made to construct an appropriate diet based on the normal caloric requirement of the individual for his particular grade of life activity. A person whose ideal weight is sixty-five kilograms, would require daily about 2,300 calories for a life of moderate activity; and for such a person a diet designed to produce a loss of two pounds of weight weekly, would be one which supplied about 1,300 calories. Often it is advisable to begin and continue with a less reduced diet. Rarely is it advisable to give a diet supplying less than 1,200 calories.

Ordinarily the patient can continue his customary activities while taking the reduction diet, but advantage is sometimes obtained by beginning the course of treatment with rest in bed for a short time, and giving a diet which supplies 500 calories less than the basic caloric requirement. (The basic caloric requirement can be calculated approximately by multiplying the ideal weight in kilograms by twenty-five.) When the patient is out of bed, he may be given the fuel necessary for the more active life, less by the number of calories which it is desired to secure from the combustion of his body fat.

The hygienic treatment of obesity has particularly to do with exercise. Exercise makes for better circulation and elimination and deeper breathing. But limitations are imposed on the obese in the matter of exercise, both by the obesity itself and by complications. In cases complicated by heart disease rest may be required in greater or less amount, and the exercise allowed may require to be very strictly regulated. If the obese patient's habit of life is one of moderate activity, it is usually well to have it continue so. Advantage may be gained by letting the patient know that the treatment of his obesity calls for no change in his ordinary ways of life, but only in his diet.

The following prescription presents an example of a diet for obesity of a general character which can serve as a basis for individual modification.

OBESITY DIET

Protein, 84 grams; fat, 56 grams; carbohydrate, 127 grams; calories, 1350.

BREAKFAST

Grapefruit, strawberries, tomato, 180 gm. (6 oz.); or orange, apple, peach, muskmelon, watermelon, blackberries, huckleberries, 120 gm. (3 oz.).
Oatmeal porridge, or similar cereal, 90 gm. (3 oz.).
Bread, 15 gm. (½ oz.).
Eggs, two.
Milk, 240 gm. (8 oz.).
Coffee, tea, cocoa shells, clear infusions.

DINNER

Cooked spinach, string beans, wax beans, celery, chard, okra, beet top or dandelion greens, cabbage, cauliflower, sea kale, brussels sprouts, oyster plant, tomato, 180 gm. (6 oz); or carrot, squash, turnip, beet, 90 gm. (3 oz.).
Raw lettuce, endive, celery, cabbage, tomato, cucumber, 120 gm. (4 oz.).
Boiled, broiled, or roasted fresh beef, mutton, lamb, chicken, 90 gm. (3 oz.).
Boiled or baked potato, boiled rice, boiled macaroni, 90 gm. (3 oz.).
Bread, 30 gm. (1 oz.).
Butter, 7 gm. (¼ oz.).
Lemon juice on salad as wanted.

SUPPER

Fruit as at breakfast and cooked vegetables as at dinner.
Milk soup, viz., cream of corn, celery, asparagus, tomato, carrot, spinach, oyster plant, onion, 210 gm. (7 oz.); or milk, 240 gm. (8 oz.).
Cottage cheese, 60 gm. (2 oz.).
Bread, 30 gm. (1 oz.).
Butter, 7 gm. (¼ oz.).

The diet given above can be made completely lacto-vegetarian by substituting milk, skimmed milk, buttermilk and cottage or other cheese for the animal flesh and eggs. Often one or two eggs can be allowed in the diet when flesh is considered undesirable; and in many of the elderly patients and complicated cases a small amount of flesh can be allowed occasionally with advantage. For changing the character and amount of the protein ration and increasing and diminishing the fuel value of the diet, the following short lists of approximate equivalents are offered suggestively:

Containing Approximately Twelve Grams of Protein With Varying Fuel Values

Meat, lean, cooked, 45 gm. (1½ oz.); calories, 110.
Fish, lean, cooked, 60 gm. (2 oz.); calories, 50.
Eggs, two; calories, 150.
Egg, one, and bacon, fried, 30 gm. (1 oz.); calories, 225.
Egg, one, and milk, 180 gm. (6 oz.); calories, 195.
Egg, one, skimmed milk, 180 gm. (6 oz.); calories, 135.
Egg, one, cottage cheese, 30 gm. (1 oz.); calories 105.
Milk, 360 gm. (12 oz.); calories, 240.
Skimmed milk, 360 gm. (12 oz.); calories, 120.
Cottage cheese, 60 gm. (2 oz.); calories, 60.
Cream cheese, 60 gm. (2 oz.); calories, 100.
American cheddar cheese, 45 gm.; calories, 200.

Possessing Fuel Values Approximating 100 Calories, and Containing Small Amounts of Protein

Bread, 40 gm. (1⅓ oz.); protein, 3 gm.
Cereal porridges, 120 gm. (4 oz.); protein, 4 gm.
Potato, boiled, 100 gm. (3⅓ oz.); protein, 3 gm.
Banana, 100 gm. (3⅓ oz.); protein, 1 gm.
Orange, 270 gm. (9 oz.); protein, 1 gm.
Apple, 300 gm. (10 oz.); protein 1 gm.
Cream, 50 gm. (1⅔ oz.); protein, 1 gm.
Butter, 15 gm. (½ oz.); protein, 0 gram.
Bacon, fried, 20 gm. (⅔ oz.); protein, 3 gm.

A prescription for a daily diet of a very strict character, which might be used in special cases, is the following, which supplies protein, 80 grams; fat, 10 grams; carbohydrate, 200 grams; and calories, 1,200 grams. Two quarts of skimmed milk, one quarter pound bread, one pound green vegetables of small carbohydrate content, and two oranges.

CONCLUSIONS

In concluding, I wish to emphasize the following points:

1. Obesity is a common disease whose prevention and cure or amelioration mean much for the life and happiness of many; and its treatment in suitable cases by dietetic regulation is safe and generally effective at the hands of trained physicians; but dangers may attend its treatment by unskilled persons.

2. The rate of the reduction in weight should be slow, as a rule not exceeding the average of two pounds weekly; and the fuel value of the daily diet should be not less, as a rule, than 1,200 calories, and usually more than that.

3. The contraindications to reduction should be kept in mind, and reduction should never be pushed in the presence of untoward symptoms.

4. It is not enough, in most cases, to diminish the fuel value of the diet; the diet should also be regulated in other ways so as to favor complicating and associated morbid conditions.

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ARSENICAL PREPARATIONS IN THE TREATMENT OF SYPHILIS

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Too much attention cannot be given to the arsenical products at present so extensively used in the treatment of syphilis, and for this reason the recent utterances of Milian, of Paris, who has done so much to advance this treatment, are of interest. The first precaution in giving an intravenous injection is to give it slowly, and Rober's experiments in this direction are conclusive. This rule is imperative in the administration of the arsenobenzols for the reason that when they cause accidents, these occur quickly.

Let us suppose that a nitritoid paroxysm arises one or two minutes after the beginning of the injection. If the injection is being given slowly and the solution well diluted as it should be, since it requires about ten minutes to complete the injection, it can be stopped the instant the first symptom appears, thus controlling the intensity of the paroxysm. On the other hand, if a concentrated solution is used, the probability will be that most of the drug will have entered the circulation when the attack begins, so that all control over it is lost, and Milian very correctly says that injections made by Ravant's technic cannot be given with the necessary slowness.

Dilute solutions only should be used and precautions should be taken, similar to those employed against anaphylaxis, by first injecting one cubic centimetre of the solution, then waiting about fifteen seconds before injecting another cubic centimetre. This should be done a third time and the rest of the solution then slowly injected. This technic should be adopted in every case when the treatment is begun, and from what has been observed in the Geneva clinics, I would add that it should be the routine practice if accidents are to be avoided.

As you know, Milian introduced the use of adrenalin as a treatment of nitritoid crises and he very rightly objects to its indiscriminate use as a prophylactic. As no reaction takes place after its administration, the practitioner, deceived by this fact, is apt to give a too large dose of the arsenical product so that accidents occur later and then the adrenalin may not be effective in counteracting them.

Suppurative Otitis Media Treated by Zinc Ionization.—T. B. Jobson (*British Medical Journal*, March 1, 1924) believes that zinc ionization is the most efficient method of treatment of tympanic sepsis of a certain type. It is not suitable for acute or subacute cases or for attic cases with cholesteatoma. Of course, in treating any case of otorrhea, oral and postnasal sepsis must be eliminated to prevent infection. The criterion of suitability is an open tympanum with an adequate perforation leading to it in which the sepsis is limited to the tympanic cavity. A tympanum "closed" by polypi or cholesteatoma is unsuitable. The advantages of treatment by ionization are: 1. It will cure any case of otorrhea which is curable by drops. 2. It will accomplish this in one hundredth part of the time, thus saving an enormous amount of the patient's, doctor's, and hospital's time. 3. It will cure a large number of cases which do not mend with ordinary antiseptic treatment.

Historical Medicine

Mention Made of the Fingers by Rabelais

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No direct medical reference to the fingers is made by Rabelais. They are only referred to as organs of expression, or on account of their connection with medical superstitions. Any mention of the fingers, however, by the most objective genius who has ever occupied himself with writing about human physical peculiarities cannot be without interest.

In modern clinical medicine, the hands, together with the hair, scalp, face and neck, as being exposed, afford a physician, most easily and swiftly, a general idea of the condition and constitution of the patient. Besides, there has grown up of late years a vast literature, touching the symptomatology, pathology and treatment of the fingers and hands, as for instance, their aspect in acromegalia, in myxedema, and in other interesting conditions.

The fingers and hands of the physicians and surgeons themselves have taken on an ever increasing importance since Rabelais's day, both as instruments of education for the acquisition of facts and ideas, and on account of their manipulative dexterity. Rabelais, however, recognized what faithful, useful servants they are in the scene in which the companions of Pantagruel tell their magnanimous chief that he might depend upon them as upon the fingers of his own hands (1).

WOUND OF THE FINGER

In Pantagruel, Rabelais enumerates a number of curious ways in which death may supervene, and among others, of a Roman on whose tomb on the Flamminian Way the epitaph stated that he died by being bitten on the little finger by a cat. Le Duchat, with his accustomed erudition, has dug up the reference, and it appears that the good man's heirs drew the attention of the passerby to this new kind of death (novum mortis genus), and at the same time, took the opportunity to express their disapproval of the cat (*improba felis*) (2). The same type of mind nowadays would give a short dissertation on infected wounds, equally for the edification of the same passerby.

THE ITCH IN ITS RELATION TO THE FINGERS

Rabelais repeatedly mentions the *ciron*, the itch mite, and especially that it is found between the fingers (3). He, the epitome of the folklore of the Middle Ages, knew of the itch mite long before the Corsican, Ranucci, demonstrated it in Albert's clinic in Paris. In fact, Ranucci's demonstration was made from what he learned from the Corsican peasant women. Equally interesting is the fact that the Genovese galley slaves used mutually to relieve one another of their itch mites by picking them out. These sharpeyed youngsters, driven by that great mother of invention, necessity, found the itch mite long before the learned physicians were aware of it. By the way, it may be remarked that the itch mite can just be seen with the naked eye as a little white speck on the point of a pin. The itch was extremely prevalent in the Middle Ages; poor hygiene and promiscuity would see to that, as it did in the recent Great War.

A further value to these references, besides the priority of observation, lies in the fact that a great scholar like Rabelais, acknowledgedly the greatest of his time, was yet broadminded enough to note an observation appertaining to the common people. This broadness of view and hospitality to observation is characteristic of Rabelais, who lived at a time when narrowness of view and hostility to observation was by far the more prevalent attitude.

INTERLACED FINGERS AS A PREVENTION OF CHILDBIRTH

One of the most interesting references to the fingers is where the jealous and angry Juno held her fingers interlaced to prevent Alcmena giving birth to Hercules. The following is an abstract of the tale as related by Pliny.

To remain seated with the fingers interlaced near a pregnant woman, or a person who has taken medicine, is maleficent witchcraft. It is still worse if the fingers are clasped over one or both knees. It is also maleficent, in the same sense, to cross the legs, no matter which leg is uppermost, or alternately so. Our forefathers, Pliny further stated, forbade generals and magistrates in their assemblies to assume this posture, as constituting an obstacle to everything under discussion.

This rule might act excellently in a rather unexpected way. In a deliberative assembly the members are usually past middle age, and therefore, at a time of life when the body, especially the lower part of it, together with the knees and the legs are breaking down. For example, it is an old saying that the knees give way before the head. These people, therefore, are subject to all sorts of uneasiness from hernias, piles, fissures of the anus, intertrigo, irritable bladder, pains in the legs, varicose veins and rheumatism of the knees and ankles, and any rule denying them change of posture might readily act as a sort of cloture or abbreviator of the session.

The story of Juno and Alcmena is excellently given in Ovid's Metamorphoses. It always seems to me that the tales of Ovid are, for the most part, rather wearisome, but this one goes along finely and is full of movement, and Rabelais must have enjoyed it thoroughly, for, as Tilly says, alacrity and swift motion are important elements in Rabelais's imagination (4).

Juno was jealous and she had a right to be, for Jupiter was an old rip. The natural result of his little affair with Alcmena was a son, and Juno, powerless to do anything against Jupiter, took her revenge on the lady, and seated herself with her hands clasped over her knee chanting charms before

the house in which Alcmena was in labor. A red headed servant girl, who was passing in and out, swiftly correlated the presence of this tragic looking lady with the prolonged and ineffectual labor pains of her mistress in the house, and she thought of an expedient. Coming out with a pleasant smile, she begged her to cheer up as the birth had just terminated fortunately. It appeared that it was for Juno the psychological moment when she was wholly absorbed in the charm, and this news caused her to jump up and to fling her arms in the air. This indeed broke the charm, and Hercules was promptly born, whereat Juno was so outraged at the trick played upon her by the red headed servant girl that she sprang at her and, catching her by her prominently flaming top, she dragged her around on the ground in the front yard of the house, and finally turned her into a weasel with the curse that, thereafter and forevermore, she and her descendants should bear their offspring through the mouth instead of, as an obstetrician would say, *per vias naturales.*

There are some other touches in Ovid's account which are medically interesting. For instance, Juno sat with her left knee prominence (Latin, *genua,* Greek, *gona,* an angle) placed in the right *poplys. Poplys* is the real Latin name from which the medieval medical term, popliteus, is derived. It is here interesting to note that, as a contribution to obscurity, our anatomists have given the epithet, popliteal to two distinct regions, one involving the soft parts of the hollow of the knee, and the other, quite distinct from this, and well removed from it, to the space on the posterior aspect of the lower extremity of the femur. Major George F. Shiels, while acting as expert witness, once used this ambiguity cleverly to confuse a lawyer who was questioning him.

THE MEDICAL FINGER

The youthful Prince Gargantua had a ring made of four different metals on the left medical finger, and one made in a special shape on the right (5). It appears that the finger we now call the annularis was then also called the medical finger (*digitus medicus*) because the ancients were accustomed to spread out their ointments with it, and the form in which a procedure was carried out had then a vast importance. This finger had also an anatomically sentimental signification, as M. Pector says that it was on the annularis that the bride wore the conjugal ring, because it was believed that a vein originating there ran directly to the heart (6).

Also when Panurge consulted the Sibyl of Panzoust in regard to his marriage, he advanced toward her with a profound reverence and placed on her medical finger a fine gold ring, in which was a toadstone of Beusse, magnificently set (7). This he did to ingratiate himself with her, so that he might receive a happy vaticination. Everyone knows of his bitter disappointment, but in the matter of the ring, he behaved like a perfect gentleman. Although he got worse than nothing in return for his liberality, he retired without making any effort to reclaim his property.

Besides the medical finger there was also *le maitre doigt,* the master finger, which was the thumb, as being the strongest of all (8).

SCRATCHING THE HEAD

A head free of pediculi is a recently acquired luxury in the world's history. Rabelais seems to have had a special contempt for those who affected a sort of dandified delicacy by scratching their head with one finger (9).

In Rabelais's day the fingers had still another medical significance; they played an important part in graduation exercises. In conferring the degree of doctor of medicine, after the candidate had taken the oath, the president of the faculty delivered a brief exhortation, then took up a square topped hat, traced with it in the air the sign of the cross, and put it on the candidate's head. Then with two fingers of the right hand he gave him a light blow on the head, and then the accolade. This blow with the two fingers was called the *soufflet,* and signified that from that moment on the recipient became a new man, and that this was the last insult he would be called upon to endure. It was a ceremony such as this, modelled on the one conferring knighthood, that undoubtedly inducted Rabelais himself into the ranks of the medical profession at Montpellier in the year of our Lord 1530.

Another trick was to comb the head with Nature's own comb, the four fingers and the thumb, like a certain professor whom Rabelais named. This was a great saver of time, especially in the amenities of life, and Rabelais says that such trainers of youth asserted that for their pupils to comb the hair in any other way, to wash or to clean themselves was to lose time in this world (10).

Cleanliness, however, really expedites work, and Ian Hay relates that, in the English army on the Flanders front, the rule that the men had to be cleaned up and shaved by ten o'clock each day had to be strictly enforced, or all other work fell behind.

In another situation Rabelais speaks of scratching to signify ennui (11). Pantagruel and his companions were at sea in a sailing vessel during a dead calm. The only motion was the lazy rocking of the ship in the roll of the ocean. Pantagruel was sleeping with a Greek book in his lap; Epistemon was taking an observation of the sun: Friar John was in the kitchen looking after the roasts and the fricassees; Panurge was blowing bubbles with a pipe; Gymnaste was whittling toothpicks; Carpalim was making a toy windmill; Eusthenes was beating the devil's tattoo on the breach of a cannon; Xenomanes was repairing an old lantern; Ponocrates dreaming dreams, tickled himself to make himself laugh, and scratched his head with one finger. Suddenly Friar John appeared in the midst of all this drowsiness shouting, "How would it be as a pastime to have a drink?" Instantly the scene was changed, and everyone took on a Rabelaisian activity.

In another situation, the Queen of Entelechy (the Kingdom of Quintessence), who used to cure all disease with a tune on her wonderful organ, on receiving no answer from either Panurge or Pantagruel when she addressed them in the "hifalutin'" language natural to her, construed their silence as being either Pythagorean or Egyptian. Egypt was at that time the workshop of fine, wiredrawn philosophy, where the natural mode of communication re-

duced itself to biting the nails and scratching the head with one finger (12).

There are other references to the fingers, such as licking the fingers when anything good was eaten (13), a gesture much more frequent then than now, because of the relative scarcity of both forks and napkins. Then, too, there are the eloquent fingers (14) much more frequently encountered among the southern Europeans than among us of the more stolid north.

Of course, we now know many things about the human fingers with which Rabelais was wholly unacquainted. For instance, he did not know anything about glossy fingers, or about Dupuytren's contraction, or about the drumstick fingers associated with bronchiectasis, or about the clumsy fingers of myxedema, or about the tapering fingers of the lymphatic diathesis, and the equally tapering fingers of the solid edema of leprosy. Our knowledge of the hand in syringomyelia, Morvan's disease and sclerodactylia has also grown up since Rabelais watched his fellowman with such knowing eyes in the beginning of the sixteenth century.

He must have known about the tremulous fingers of palsy, and he often must have seen the clawed hand, *la main en griffe,* of leprosy during his service in the hospital at Lyons, but he does not mention them.

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Contributors to the Science of Medicine

JOHN HUNTER

John Hunter, the Scotchman, was the most conspicuous pioneer in the study of comparative anatomy. The following notes dealing with parts of the career of that really great man are mainly gathered from the Hunterian oration delivered at the Royal College of Surgeons of England on February 14, 1923, by Sir John Bland-Sutton, president of the college, and which have been published recently in book form.

John Hunter was born at the farmhouse Long Calderwood near Glasgow. The house bears a tablet to the effect that he was born February 13, 1728. In his lifetime the birthday was kept February 14th, and the college drinks to his memory in "solemn silence" on the fourteenth. John or Jockie, as he was called at home, the youngest of a family of ten, petted by his mother, his father died in 1741 aged seventy-eight, disliked school and hated books. He preferred to lead an out of door life, looking after nests, insects and animals, while his brothers received the same education as country gentlemen. At the age of seventeen he spent some months with a brother in law, a timber merchant and carpenter in Glasgow, and his mother noticed that "the lad showed neatness of hands and quickness of perception in anything that regarded mechanism. As Sir John Bland-Sutton points out, it is instructive to consider how the farm life fitted John Hunter for his subsequent career. The practical surgeon is a craftsman: Greek and Latin are useful to him for polish, but think of the natural knowledge a smart boy can collect on a farm about the sowing, sprouting and ripening of crops, the breeding of animals, gelding of colts, spaying of pigs, caponizing of cocks, fattening and slaughtering of animals for food, farriery, shoeing and doctoring of horses, observing the wild life in ponds and ditches, fields and hedgerows, trees and heather. In the village he can watch the wheelwright, smith, tinker, glazier, cobbler and cooper, all experts with simple tools. Practical knowledge of this kind was useful in that state of life into which William Hunter, his brother, called him. At the age of twenty John Hunter came to London with the object of assisting his brother William, who had a school of anatomy at the back of his house in Covent Garden. John showed uncommon skill in dissecting, and worked hard. Human anatomy appealed to this uncouth Scot, and William Hunter moulded John's and "bred him to anatomy" in its widest significance with astonishing results. It is easy to understand that the rough, unschooled, apparently idle, Jockie Hunter when introduced to the dissecting room, became deeply interested in the structure of the human body and found it an absorbing study. Verily the gunpowder of genius is stored in many brains but it needs a match. Hunter studied anatomy in the winter and surgery in the summer. While engaged in the routine of dissecting and teaching he developed a taste for comparative anatomy, which became an absorbing passion.

In 1760 a force was sent from England to take Belleisle, an island near the mouth of the Loire. Hunter applied for an appointment with the expedition and served as staff surgeon. Belleisle was a country new to him in flora and fauna and he had no knowledge of marine zoology until he landed on this island which afforded him access to barnacles,

sea anemones, sea stars, sea nettles, sea cucumbers, sea squirts, sea urchins, squid, huge spider crabs, tunnyfish and he made the best of his opportunities. He next went with a British army to Portugal, where he studied botany and geology. On the conclusion of peace Hunter returned to London a staff surgeon and deputy purveyor on half pay. He took a house in Golden Square and started to practise. His half pay, probably half a guinea a day, helped to pay the rent. He opened a room for dissecting, made teaching preparations and while waiting for patients taught human anatomy for capital and comparative anatomy for interest. The classes were neither large nor lucrative, for he was not a good lecturer.

In 1765 he bought the lease of three pieces of land at Earls' Court, Kensington, built a house, established a small menagerie, and made observations and experiments. Leopards and jackals lived in the den, buffaloes, stallions, sheep, goats and rams occupied the stables. A mulberry tree furnished leaves for the silkworms, and St. John's wort supplied pollen for bees. There was a pond for ducks and geese which laid eggs for the table and for embryological studies. He made observation hives for the bees, discovered that their wax was a secretion, and left some excellent notes on the relation of vegetable to animal fat. With the aid of Ramsden's delicate thermometers he discovered the significance of the terms hot blooded and cold blooded animals.

JOHN HUNTER

In 1787 Hunter read a paper before the Royal Society on some observations "tending to show that the wolf, jackal and dog are all of the same species." The picture of Hunter accompanying this article is from a portrait painted by his brother in law, Robert Home, which now belongs to the Royal Society and which is the frontispiece of Sir John Bland-Sutton's book. The old dog in the picture is supposed to be the offspring of a half bred wolf bitch and an English mastiff.

The fame of Hunter is imperishably preserved in his wonderful museum now housed in the Royal College of Surgeons Building in Lincoln Inn Fields. According to Sir John Bland-Sutton, this museum owes its origin to the peculiar conditions under which medical education was carried on in London in the eighteenth century. Schools of anatomy were private ventures. It was necessary for the surgeon who owned and managed the school to illustrate his lectures with skilfully prepared specimens. Hunter made many preparations for his brother and some exist in the Hunterian Museum at Glasgow. But when he returned to London in 1763 he brought with him specimens of natural history from Belleisle and Portugal and these formed the nucleus of the collection for illustrating comparative anatomy. As Sir John Bland-Sutton says, it is a fair inference that the specimens were collected to subserve teaching purposes directly connected with his lectures, but it grew and widened until it became a museum that could be regarded as a discourse on the human body in relation to the animal kingdom. Gradually its founder's ideas expanded, and he conceived that it should be an ample illustration of life exhibited in the vast chain of organized beings, living and extinct, by a display of the various structures in which the functions of life are carried on. In 1783 he took premises in Leicester Square and built his famous museum. Sir Joshua Reynolds lived in the square, and the two men subsequently helped each other to what artists jokingly call immortality, one as subject, the other as painter. The famous picture by Reynolds of Hunter is the most cherished possession of the College of Surgeons.

On the death of Hunter his executors, Matthew Baillie and Everard Home, with rare judgment, retained the services of the former curator, William Clift. He had no books, so he read and made extracts from Hunter's manuscripts. The transcripts were made from some of the notes afterwards destroyed by Everard Home. They were published by Owen under the title *Essays and Observations* in 1861. For seven years Clift received seven shillings weekly and meekly as wages. In return for these sources he became the first conservator when the government bought the collection and intrusted it to the College of Surgeons in 1800.

The museum contains in orderly array, specimens, big and little, of every living thing Hunter could secure. Shrimps and sharks, humming birds and ostriches, shrews and whales. Of the human kind, dwarfs and giants. The fame of Hunter was such that new or rare animals were brought to London for his opinion. When John White returned to England in 1790 from New South Wales, "the nondescript animals of that settlement"—kangaroo, potoroo, tapoau roo, and the like were handed to Hunter for investigation. The museum is now so rich in specimens illustrating the anatomy of vertebrates, living or extinct, normal or abnormal, that practically every discovered specimen is there represented. So far as embryology is concerned the collection of malformations in the museum is the finest and most comprehensive in the world.

Hunter took keen interest in monsters not from curiosity but from the scientific viewpoint. Hunter clearly recognized the importance of studying the developmental stages of animals. Hunter studied the horse carefully both as an anatomist and a surgeon. Hunter helped to found the Royal Veterinary

College of England in 1791, he was a vice-president and with Cline, a well known surgeon of the time, served on the committee that approved of the appointment of Vian St. Bel as the first professor of the college. St. Bel died in 1793, probably from glanders. His early and unexpected death led to some difficulty, and Hunter, in order to help in the emergency, arranged for the students to have admission to the lectures of the leading teachers in the hospital. Hunter made a collection of whales and when he died in 1793 and for many years afterwards, his skeletons of whales were the only examples existing in a museum in England.

Hunter was one of the first collectors of fossils on a large scale in England and it is one of the romances of science that the discovery of the collection by Richard Owen induced that wonderful man to forego practice and bend his great intellect to comparative anatomy, paleontology and zoology. When Owen started to practise as a surgeon near the College of Surgeons, Abernethy, the great surgeon of the day, concerned at the neglected condition of Hunter's museum prevailed upon his old pupil Owen to assist in cataloguing it. In this way Owen became acquainted with Clift, the conservator, and obtained access to the collection. A few years later he married Clift's daughter, was gradually weaned from practice and devoted himself to comparative anatomy. While busy with the catalogue he unexpectedly found Hunter's store of fossils. Startled by the number and variety of the specimens he began to work on them seriously. He dissected the bodies of animals to enable him to study fossils and became essentially a paleontologist revelling in the reconstruction of extinct animals. The museum contains reconstructed skeletons of huge ground sloths; the gigantic armadillo with an "osseous coat in compartments," and a huge bird, the moa, towering above them all. Skeletons of sloths and armadilloe turtles and crocodiles, with ostriches and emus, stand in rows, demonstrating the truth of Owen's deductions. It was due to Hunter's fossils that Owen turned his attention to paleontology and inspired interest in the prehistoric animals which once moved on the face of the earth.

Hunter was a man far in advance of his time and had to contend with detraction, envy and prejudice as all such men have to contend. That his views were farseeing is being proved at the present time, if such proof were needed by the establishment of chairs of comparative medicine at universities and medical schools and by the full realization of the medical profession that much can be learned concerning human diseases from those of animals and that in order to discover the causes of many diseases medical and veterinary investigators must work in cooperation. A lesson may be learned from the life of Hunter, namely, that it is unnecessary for successful original research that a man should be well read or even well educated. Long schooling may not only tie down and hamper the play of genius but does not afford the opportunity for giving genius the widest scope. If Hunter had not been allowed to run more or less wild pursuing his own bent amid natural surroundings his intellect would not have blossomed so luxuriantly. Education tends to curb and narrow the inborn powers of the mind and in some instances stifles them entirely. John Hunter's works live after him and in his museum he has left monumentum dere perennius. His influence is an inspiration to the surgeons of today.

The Symbolism of the Goldheaded Cane.—Dr. Isador H. Coriat (*Annals of Medical History,* March, 1924) introduces his article by referring to the book entitled *The Goldheaded Cane,* written by Dr. William Macmichael and published in 1827. The cane, the history of which is told by Macmichael, and later by Dr. William Munk, is still preserved in the College of Physicians in London.

Historically the physician's cane is linked with the wig and ring as symbols of deep learning, wisdom and power. It is doubtless related in symbolic meaning to the herald's staff, the caduceus of Hermes, the wand of Æsculapius, the sacred wands of primitive peoples, the mystic wands of fairy tales, the staves of constables and sheriffs, and the phlebotomist's staff. Jeaffreson suggests that possibly in ancient times the physician's cane and the surgeon's club were used actively. For centuries fustigation was believed in as a sovereign remedy for bodily ailments as well as moral failings, and a beating was prescribed for ague as frequently as for stealing. Such customs may have been merely incidents in the history of flagellation, into which there enters strong sadistic and masochistic components.

The physician's cane was generally smooth, of moderate weight, and with a gold head in the form of a knob. Gold once was supposed to have medicinal properties, but the desire to make a good appearance on the part of the physician was probably the stronger motive. Often the head was hollow, and in the cavity it was the custom to carry some drug. A mystery about it was thus created in the mind of the people, some of whom believed that the head of the cane was the dwelling place of a familiar spirit which gave the owner extraordinary powers. The symbolism, therefore, is twofold: in the first place, the cane was a bit of magic, a charm, a sort of omnipotent instrument which had power over evil; second, it was the symbol of the office of the physician himself, like the caduceus, signifying that the owner has medical power and authority, is omnipotent in his calling. Gold was also the symbol of the sun, the all fertilizing divinity, Apollo, the father of Æsculapius. In alchemy, male activity is derived from gold, female from silver.

In summarizing his article, Dr. Coriat writes: "Thus the goldheaded cane became a sort of symbolic carrier of the power of the physician or the immortal transmitter or bearer of power as it passed from one physician to another. Historically it was emblematic of the physician's profession but beneath this there was a hidden symbolism, whose meaning stretched back to the beginnings of medicine in magic and thus unconsciously betrayed the secret of therapeutic power. Such transitions from literal meaning to veiled symbolism are very frequently encountered in the development of civilization and culture. To cite only one example of these age old mysticisms, we have the throwing of rice at a newly married couple which symbolizes fertility."

Editorial Articles

LAUGHTER

The laugh is said to be one of the sign manuals of the intelligent thinking animal; no one ever saw a true laugh on the lips of a domestic or wild animal. Apes grin and dogs have been taught to contort their lips into the semblance of a laugh, but no sound is forthcoming and its similitude to the human mode of exhibiting emotion, generally pleasure, by the sound termed laughter is indistinguishable. While then it may be allowed that laughter is a human gift, its origin is a question of scientific interest. Great men and ordinary individuals have argued and theorized as to the nature and purpose of laughter without completely understanding or explaining it.

In a treatise published last year Professor Greig showed that like love, laughter possesses a special and a general significance. Laughter is of various kinds, as hysterical, spiteful, satirical, Rabelaisian, Falstaffian, petulant, good natured and so on. To some extent a person's laughter reveals his character. The villain does not or, at any rate, should not have a hearty genial laugh. Mr. J. C. Gregory has brought out a book recently, published by Kegan Paul, London, dealing with the nature of laughter. He points out that laughter expressing the pure comic perception of the ludicrous, the source of the most highly civilized laughter, is the most difficult to analyze.

In attempting to define the real root of the external signs which accompany and express the mental perception of the laughable, he says that all laughter contains predominantly an element of relief, and leaves the impression on his readers that in his opinion the beginning of an understanding of the subject may be made from this point. The most primitive expression of a laughter provoking act is tickling, and Mr. Gregory's analysis of this phenomenon may be used as a foundation on which to build an appreciative consideration of the higher forms of laughter. According to Gregory the laughter which is aroused by tickling is due to the tickled person instinctively reacting to the touch as though it were a threat of bodily harm, and almost, at the same time, perceiving that the fear is unwarranted. The laughter does not arise from the sense of the ludicrous in this situation, though such a secondary or civilized laugh might be grafted on to the first, but from the physiological changes resulting from the mental apprehension of the fact that there was no danger.

The physiological process is explained as follows: "The call for action, against the threat, with which the situation resulting in laughter begins, increases the sugar in the blood. This sugar, and the other associated secretions, supply an extra source of energy. When action is called off, this extra store of energy producers would remain in the body, and become, since unrequired, waste products. These waste products would clog the body, which would be like a fire with too much fuel. Laughter, therefore, Crile suggests, substitutes for action by the body action of or in the body, and thus consumes the energizing secretions."

This explains the feeling of physical wellbeing which accompanies laughter, the excess energy being expended within the body, and it also accounts for the severe exhaustion which accompanies prolonged laughter. It is when the primary impulse to laughter is split up in the complications of social life that it becomes difficult to give a rational explanation of the various sources of laughter. Civilization and what may be termed refined society have had great influence on laughter. We no longer laugh at deformity and, as a rule, withhold the laughter which would inflict pain, but the nature of laughter remains the same. Society has moved in the direction of Hobbes's saying, "Laughter without offence must be at the absurdities and infirmities abstracted from persons." Which is to say that satire has become impersonal. However, the satirical laugh is still the expression of relief which is felt when a hostile idea is vanquished or made less powerful by ridicule. This is the primitive origin of laughter in a situation which has engaged the energies of the organism in a struggle against extinction and is the physiological reaction of the organism to gain relief and is still the function and justification of the laugh even in the most highly civilized circles. Laughter is an outlet for emotion, a safety valve whereby superfluous steam is blown off.

GARBAGE DISPOSAL BY THE BECCARI PROCESS

The Beccari process of garbage disposal, developed and used only in Italy, reduces garbage and other organic wastes by bacterial fermentation in closed cells. J. Waldo Smith, consulting engineer of New York city, contributes an interesting article to the *American Journal of Public Health* describing the main points of the process.

The Beccari process was developed through a long series of experiments by its inventor, Giuseppe Beccari, of Florence, who conceived it as a method for conserving manure for farms by fermenting the or-

ganic matter in closed cells. In the course of the work, about forty different forms and sizes of these cells were employed. The resultant product is humus, valuable as fertilizer. As now developed, the cell for municipal use is nearly cubical in form and contains about twenty-five cubic yards. The cells are built, back to back, of masonry, with a flat, reinforced concrete roof, in which is a charging hatch. On the side is a door for discharging. Since it is most important that the entire charge be aerated, so that the bacteria may work, a grating at the bottom supplies drainage and ventilation, and flues and air-passages around the side walls aid in this way. The ammonias formed by the process escape through a hole in the roof and are received in a tower, where they come in contact with absorbent earth, and an appropriate salt. Ferros sulphate is commonly employed, with the production of ammonium sulphate as a byproduct. Regulation of temperature and active propagation of bacteria through distribution of the air supply, according to the principles demonstrated by Pasteur, do the work. Florence, Italy, uses 208 cells to dispose of the garbage of the city, with 250,000 population.

When delivered, the garbage is dumped into the court between the row of cells and gone over for materials of commercial value. The cells are then filled with what remains. The first step in fermentation is to increase the temperature to 140° F. or more, and this is accompanied by the development of vast numbers of bacteria. Numerous experiments have been made to discover the action of the cells upon the microorganisms of typhoid fever, cholera, scarlet fever, trachoma, anthrax, etc. It was found that even the most persistent, such as anthrax, were completely destroyed. The larvæ of flies, fleas, and other parasites also were destroyed, and the germinative power of seeds checked. Bones emerged clean, with even the marrow eaten up by the bacteria. The bodies of dead animals were completely reduced, all that remained being a slightly humid, entirely odorless mass. The fermentation is finished in from thirty to thirty-five days. The fermented mass retains for a long time its heat and new heat is generated, as in manure.

After fermentation is completed, the product is stored in a large shed, where it stands for from five to fifteen days. Then it is cast through screens from one to several times, according to the type of fertilizer desired. Sometimes the product is used without screening. The writer says that he interviewed the director of the Italian National Agricultural Station, who stated that the Beccari product had been used solely for two years and had proved entirely satisfactory. Among other Beccari plants in operation in Italy, is one at Naples with 450 cells. As a unit system, writes Smith, it would be entirely practicable for any interested community to prove with moderate expense the effectiveness of the process to meet the prevailing conditions before adopting this method of organic waste disposal.

MIGRAINE

Migraine is a fairly common complaint of all civilized countries; it is hardly an affection which troubles members of a primitive race, as after all it is partly due, perhaps largely due, to abnormalities of the nervous system. Also, as Dr. F. G. Crookshank in a lecture delivered at the Northeast London Postgraduate College on February 8, 1924, pointed out, it is a subject of intrinsic importance and the migrainous not only themselves endure a vast amount of suffering but entail much discomfort on those associated with them. Moreover, it is a subject to which scant attention has generally been given and too frequently dealt with superficially and inadequately. However, this fault has been remedied or is in the process of being remedied, and up to date textbooks give to migraine the attention which its importance deserves.

An excellent description of migraine was given in a little book written by Dr. Joseph Collins, of New York, some years ago entitled *The Way with the Nerves,* in which its nervous manifestations were adequately dealt with. One of the clearest accounts ever given of its etiology is that by Dr. James Collier in Price's textbook of the *Practice of Medicine.* It is pointed out that many theories have been advanced as to the nature of the malady. It has been held to be the result of a temporary condition of intoxication from digestive, metabolic or internal secretory disorder, which recurs periodically. Collier thinks that there is little evidence in support of this view, for it is a common experience to meet with patients who had restricted their diet to an amazing extent to avoid what they deemed were "bilious attacks" with the result that the migraine had become aggravated. Neither has treatment directed against such errors had the slightest effect in benefiting migraine. Local spasm of the cerebral arteries has been advanced as the cause of the phenomena, on the grounds of the pallor and construction of the vessels of the skin and retina, which occur during the attacks.

This theory is adequate to explain the varying nature of the attacks in some cases, at one time a headache, at another teichopsia and hemianopsia without headache, at another time aphasia or hemiplegia or sensory aura without headache. However, as Collier states, it is entirely hypothetical and breaks down utterly as an explanation of the severe and

lasting ophthalmoplegia, which may accompany very severe attacks, and will hardly explain those cases in which the headache lasts for weeks or becomes continuous. Attention also may be drawn to the fact that pallor of the surface vessels is the constant accompaniment of every severe vestibular disturbance, and many sudden changes in blood pressure, as in seasickness, etc. It has been held that migraine is due to a functional disorder of the cerebral cortex in the way of combined inhibition and discharge, akin to epilepsy, solely on the grounds of the nature of the visual phenomena and of the sensory auræ, and that migraine occurs occasionally in epileptics. Undue prominence has been given to the importance of refraction as causes of migraine. Certainly, such errors when existing are likely to cause vestibular upset and therefore may be exciting causes of an attack and should in all cases of migraine be corrected.

The majority of the subjects of migraine have no such errors of refraction, nor has the correction of such errors ever cured migraine. Spitzner examined the brains from several cases of long standing and severe unilateral migraine, and found in each case a unilateral distention of the lateral ventricle corresponding with the side of the headache, and an anatomical condition of the choroid plexus in its relation to the foramen of Munro, which might easily cause plugging of that foramen from conditions of turgescence of that plexus. He attributed the attacks of migraine to temporary unilateral hydrocephalus, from temporary plugging of the foramen of Munro. His specimens are in the museum of Johns Hopkins University.

This theory is the only one based on pathological evidence, and in the opinion of Collier will explain migrainous ophthalmoplegia, for as he argues some very gross anatomical disturbance must take place within the skull to account for such severe and lasting paralysis of peripheral oculomotor nerves. The subjects of migraine are otherwise quite healthy and robust and strong and are nearly always of an active, capable and intelligent type. According to Crookshank not a few distinguished medical men, and many celebrated physicists, astronomers and philosophers have been migrainous, and have left us illuminating accounts of their sufferings. Crookshank is inclined to attribute the condition largely to the psychological situation and in his view the sex problem runs like a scarlet thread throughout and both male and females are impressed with or conscious of a personal or sex superiority. The migrainous woman resents all suggestions of feminine inferiority, which perhaps does not show that she is conscious of superiority but rather that she is unconsciously fearful of inferiority or of being considered so. The migrainous male takes male superiority for granted. Crookshank argues that migraine is a repression state, a repression of "rage and humiliation" felt in face of some problem, practical, ethical, or intellectual, that appears insoluble. The brainstorms of the migrainous, and that of the neuralgic, are defense and flight and excuse mechanisms, analogous to those which during the war, were found to be exhibited in face of physical danger.

The peculiar character of the paroxysm in each case is determined by the organ inferiority or state present. Taking the view Crookshank holds that migrainous people should be treated by psychological methods, it is interesting to know that Plotinus, the Neo-Platonist, held that cure of bodily disorder must depend upon adjustment of the unconscious mind.

MENTAL HYGIENE

Mental hygiene is of the first importance and especially in these times when children are born in immense numbers with an inherited unstable nervous temperament. Civilized life and life in cities in particular tend to produce a nervous stock with various inherited susceptibilities to disease of body or mind. The war and its aftermath, in Europe in particular, too, have intensified the tendency and it is astonishing to note the multitudes of persons obviously unstable physically and mentally. While inherited taints and susceptibilities are responsible for a great deal of the nervous manifestations witnessed at the present time, the life of large modern cities is not best calculated to benefit this state. On the whole, it may be stated that, probably, there has never been in the history of the world a period when nervous affections were so widespread.

In the first instance, in order to have a sound mind in a sound body an individual should be born healthy, and this good start is denied to many because they have inherited from their immediate progenitors an heredity taint or from them or their more remote forebears a predisposition to certain diseases or conditions of ill health. There are a few diseases which may be transmitted and which may doom the offspring to nervous affections of a serious character and which in the view of many authorities should preclude matrimony and even parentage. Children born of such stock are handicapped to a greater or less extent from the beginning but their lot can be greatly improved by paying scrupulously careful attention to their hygiene generally and to the hygiene of their nervous system.

The nervous system may be affected profoundly by the consumption to excess of toxic materials as, for instance, alcohol and other narcotizing drugs. The consequence of too great an indulgence in nar-

cotics is exhibited in the offspring in the form of an unstable nervous system. In such cases hygiene can play a restorative or strengthening part and suitable environment during youth can do much towards rehabilitating a nervous system damaged by the effects of heredity. As is pointed out in an article by Dr. J. W. Courtney which appeared in the *Boston Medical and Surgical Journal,* March 27th last, the work of physical salvage of the victims of an hereditary adynamic nervous system must be begun while they are in the formative period of life.

In the upbuilding and maintenance of vigor of the nervous system, the problem of diet looms large, while in this country, at any rate, it is beginning to receive the scientific study its importance deserves. At home parents are often kind to their children only to be cruel; that is, they allow them to eat quantities of food which has little or no nutritional value. For example, children frequently consume candy to such an extent that they contract the candy habit. In this way they injure their digestion, ruin their teeth and plant seeds of gastrointestinal troubles which come to fruition in adult life and henceforth are the bane of their existence. Children of this type are generally possessed of an ill balanced, nervous system with morbid tendencies, one outlet being an unrestrained appetite. Proper upbringing is more than half the battle with the child whose parents or ancestors have handed down to him a defective nervous system.

Before leaving the subject of hereditary nervous affections, it may be as well to call attention to other diseases, which by flooding the system with poisons are apt to transmit to another generation a susceptibility to the same diseases together with a somewhat abnormal nervous system. Rheumatic affections come within this category, and the chronic forms most emphatically. An individual with chronic rheumatism, and there are many comparatively young persons with that type of disease, is poisoned throughout his system, and the diathesis is or may be handed down to the children. In all toxic states of the body the nervous system is more or less involved. In the case of children then born ill balanced from the point of view of the nervous system great care must be taken to bring them up in such a way that their lack of stability is corrected as far as is possible rather than accentuated. One habit which must be always encouraged and never allowed to fall into default is that of keeping the functions of elimination and excretion at work freely. By following this rule the waste food products are not allowed to remain sufficiently long in the system to poison it and physical and nervous vitality lowered in consequence.

In proportion as the physical powers increase so the nervous system gains stability. The object therefore in attempting to overcome inborn nervous defects or traits is to feed and bring up those affected in the manner best suited to the individual case, the basis of training, however, being the leading of a regular wholesome life so as to store up a goodly reservoir of nervous energy for use in the future. To dissipate nervous energy in childhood and youth, as many American children and youths are allowed to dissipate it, means a premature decay of the vital powers. Conserve this energy wisely and a healthy life and a green old age may be anticipated.

THE EXCEPTIONAL PATIENT

Every patient is, to an extent, exceptional—at least, different—and it may well be borne in mind that the new patient—the one with whom we have had little or no experience previously—may be a different one, especially from the therapeutic viewpoint.

This has been most strikingly and sadly illustrated recently in a case reported by Bazin in the *Journal of the Canadian Medical Association.* The patient was a boy of fifteen years, apparently much like other boys, and the ailment was common enough—constipation. The treatment was not so common, but the drug used was seemingly harmless—two enemas a day consisting of six cups of water containing six teaspoonfuls of boracic acid. These enemas were followed on the first day by bowel movements, but on the second day by frequent vomiting, and on the third day by a continued vomiting and by a general skin eruption.

The enemas were stopped on the fourth day, the rash began to fade, and the vomiting ceased. On the sixth day two more enemas were given, with a return of the symptoms. The child grew steadily worse and died on the eighth day.

Whether the resumption of treatment was brought about at the instance of the physician we do not know, but we have known a treatment to be persisted in from sheer insistence on favorite routine, which, in most cases, had seemed to be helpful, but which, in the individual case, it was evident to an unbiased outsider, did more harm than good.

Potassium iodide is so commonly used and so often with benefit that we do not usually think it can be harmful, yet we have seen a comparatively robust man thrown into convulsions by a few ten drop doses in the treatment of syphilis, and death undoubtedly was due to a not large dose repeated after a few weeks' interval by another physician who had been warned of the patient's idiosyncrasy.

Anyone who has seen the dire results which may follow the ingestion of a fraction of a grain of quinine will ever after question his patient as to whether

he can take this drug with impunity. Nor can he be absolutely certain then, for a person may be sensitive one year, whereas he was not so the year before.

On the other hand, in a great many instances the physician fails to accomplish his desired end because he does not give a drug in sufficient quantity. It is always well to be on the safe side, but with patients whom we can study it is well to remember there are degrees of tolerance as well as of intolerance. As one distinguished teacher puts it, if a remedy is given, it should be given in sufficient amount to produce the results aimed at, no matter what the average dose may be. One should always be wary, however, in the case of the new patient and bear in mind also that there may be an idiosyncrasy for almost anything, also that in too large amount even sugar, salt, or plain water may be a poison.

THE VALUE OF THE DENTIFRICE

In these pages we have called attention to the extravagant claims which are made for the action of many dental pastes and powders. That they should have more than a momentary effect in changing the reaction of the fluids of the mouth, in digesting plaques or in reducing the bacterial flora, hardly needs to be pointed out. We have given them some credit, however, as cleansing agents.

Now comes a dentist of experience, Dr. Tishler, of Boston, and casts much doubt upon even this quality. In *Dental Cosmos* for May he points out that "immigrants who arrive in this country from the rural districts of some parts of Europe, where mouth hygiene is unknown, have beautifully clean teeth, but a few years of our city living changes this completely even when the toothbrush and paste or powder are adopted for toilet use. Caries also becomes the rule rather than the exception and is often accompanied by advanced peridontal disturbances from turgid inflamed gingivæ to rapidly developing pericemental disintegration and pocket formation."

"Would this indicate that the use of paste or powder is sufficient to keep the mouth and teeth in a state of health? Does the condition of the average mouth that we, as dental practitioners see constantly, bear this out? . . . Several years ago the writer became convinced that powder and paste were negligible as a factor in developing and maintaining good mouth hygiene, that no matter whether an alkaline or an acid dentifrice was used the resulting condition was equally unsatisfactory. . . ."

"Is it not time that we consider this problem of pastes and powders carefully and take some real steps toward improving the mouth hygiene of our patients? If the constant use of these agencies over a period of years will not produce better results than we see constantly, why should we not endeavor to find some thing or method that will?"

Tishler is of the opinion that, aside from the right diet, "the problem of obtaining and then maintaining good mouth hygiene does not concern any particular powder or paste, no matter what the ingredients may be, but is a question of mechanical application and thoroughness of brushing by the patient." The method he advises is "proper brushing faithfully carried out two or three times a day, plus a half teaspoonful of salt to a glass of water, and a thorough use of this solution as a wash after the brushing is finished."

Notwithstanding their possible ineffectiveness as cleansing agents, there still remains a field of usefulness for the dentifrice in the toilet of the teeth inasmuch as most of us are so constituted that the more elaborate and expensive a performance, the more willing we are to carry it out, while the good feeling and taste which a dentifrice leaves conduces to the simultaneous use of the brush. As for a hair tonic, its chief value lies in the fact that it causes us to brush oftener and more effectively, in proportion to the esthetic satisfaction it confers.

News Items

Medical School.—The new Medical College of the University of Rochester was recently dedicated, Dr. Benjamin Rush Rhees, president of the university, laying the cornerstone, and Dr. Edward Bright Vedder, of the Army Medical Corps, making an address.

Surgical Clinics.—Practical clinicoexperimental clinics will be held at the New York Homeopathic Medical College and Flower Hospital on the fourth Wednesday of each month—to include experimental demonstration of new surgical procedures developed at the Laboratory of Surgical Research and results obtained in studying different surgical problems.

Industrial Hygiene Reference Manual.—The Division of Industrial Hygiene of the State of New York has prepared for the use of physicians in New York State who are interested in industrial hygiene, a cross reference pocket manual on industrial diseases. A limited number are available, and physicians desiring a copy should apply for it without delay.

Electrotherapeutic Clinics.—Clinical demonstrations will be a feature of the annual meeting of the American Electrotherapeutic Society, which is to be held in New York September 9th to 12th under the presidency of Dr. Sinclair Tousey. The physiotherapy clinics of the U. S. Veterans' Bureau and of the Reconstruction Hospital have been offered for this purpose.

Veterans' Bureau.—A council on medical and hospital affairs has been appointed to aid the Veterans' Bureau in improving its service. Its first conference with General Hines and Dr. O. E. Cressman, Medical Director, was recently held in Washington. The council includes: Dr. S. S. Goldwater, New York; Dr. M. T. Macaachern, Chicago; Colonel R. U. Patterson, U. S. A.; Dr. W. C. Rapplaye, New Haven; Dr. Joel E. Goldthwaite, Boston; Dr. Frank Billings, Rhode Island; Dr. George W. Crile, Cleveland; Dr. Sidney I. Schwab, St. Louis; Dr. Thomas W. Salmon, New York; Dr. G. H. Kline, Boston; Dr. W. F. Lorenz, Wisconsin; Dr. George H. Kirby, Ward's Island, N. Y.; Dr. A. M. Barrett, Ann Arbor, Mich.; Dr. Douglas A. Thom, Boston; Dr. H. A. Pattison, New York; Dr. Roy Adams, Washington; Dr. Kennon Dunhan, Cincinnati; Dr. M. M. Davis Jr., New York, and Dr. Louis I. Dublin, New York.

New Home for Medical Society.—"The Mansion," on Colonial Road, has been purchased as a home for the Bay Ridge Medical Society.

Addition to St. Mark's Hospital.—St. Mark's Hospital, New York, is to be rebuilt, but in such a manner as not to interfere with its clinical activities. The buildings, when completed, will cost $1,250,000.

Flatbush Medical Society.—The following officers were elected by the Flatbush Medical Society: president, Dr. Samuel Fisher; vice-president, Dr. Stanley B. Thomas; and secretary, Dr. William F. C. Steinbugler.

College Discontinued.—The College of Dental and Oral Surgery, in existence since 1852, has applied for an order dissolving the corporation. The property has been transferred to Columbia University.

Victor C. Myers Goes to Iowa.—Victor C. Myers, Ph.D., has been selected as professor of biochemistry at the Iowa State University, and has also been appointed pathological chemist to the University Hospital.

American Electrotherapeutic Association.—The American Electrotherapeutic Association will hold its annual meeting September 9th to 12th, at the Hotel Pennsylvania, New York. All legally licensed physicians are welcome.

Medical Charity.—The largest single item, $1,257,000, and fully a third of the budget for the Federation for the Support of Jewish Philanthropic Societies in New York, was voted for medical care and medical social service.

Royal Society of Medicine.—Sir St. Clair Thomson has been elected president of the Royal Society of Medicine, London. He is an honorary member of the American Medical Association, and an Honorary Fellow of the American Laryngological Association.

Training for Tuberculosis Workers.—The National Tuberculosis Association, through a committee including Dr. Haven Emerson, Dr. Hoyt E. Dearholt, and Dr. Harry H. Hopkins, is planning a study of adequate training for tuberculosis workers.

Industrial Hygiene Institute.—An extension course in industrial hygiene for nurses will be given by Fordham University, at the Social Service School, located in the Woolworth Building. The course will be fifteen weeks in duration, and will begin September 30th. All registered nurses are eligible.

Palestine Medical Work.—Dr. Israel S. Wechsler, secretary of the American Jewish Physicans' Committee for the medical school of the Hebrew University of Palestine, will very soon leave for Europe and Palestine to supervise the beginning of the medical work. Dr. Henry Keller, of New York, has recently gone abroad, and before his return will deliver a series of postgraduate lectures on surgery at the University.

Tuskegee Hospital.—All negro control has been established at the Tuskegee Alabama Veterans' Bureau Hospital, thus ending a long controversy. Dr. Joseph H. Ward, of Indianapolis, formerly chief of the surgical service, has been appointed chief medical officer and commandant.

The United States Civil Service Commission announces an examination for junior medical officers, colored, for tuberculosis and neuropsychiatry at this hospital, salary $2,840 at entrance.

New Societies Organized.—A committee consisting of Dr. Victor V. Anderson, New York, chairman, Dr. Herman N. Adler, Chicago, Dr. Lawson G. Lowrey, Minneapolis, Dr. David M. Levy, Chicago, Malcolm A. Bliss, St. Louis, and Karl A. Meninger, Topeka, secretary, is engaged in the organization of the Association of American Orthopsychiatrists.

The Washington Psychoanalysis Society has recently been organized, with Dr. William A. White, president; Dr. Joseph C. Thompson, vice-president; and Dr. Lucille Dooley, secretary-treasurer. Membership is restricted to physicians, and is conditioned upon the presentation of a thesis containing a history of one case successfully analyzed by the applicant; the applicant himself must also present evidence of having been successfully analyzed.

The Massachusetts Psychiatric Society has been organized, with the following officers: President, Dr. Walter E. Fernald; vice-president, Dr. George M. Kline, and secretary-treasurer, Dr. Ralph M. Chambers.

Defense Test Day.—September 12th, the sixth anniversary of the Battle of St. Mihiel, has been designated by the President as Defense Test Day, and will be marked by the assembling of the Regular Army, the National Guard, and the Organized Reserves in their home communities.

Medical Reserve Officers at Carlisle.—A medical training camp has been in operation at Carlisle Barracks, Pennsylvania, for the past few weeks, the regular personnel being augmented by over a thousand men of the Medical Department, R. O. T. C. students, Reserve Corps Officers of the Medical Department, and the 104th Medical Regiment of the Maryland and Virginia National Guards. This training course is part of the preparedness plans of the Surgeon General of the Army for field service, and maneuvers were carried out under simulated battle conditions.

Society News.—The Maine Medical Association elected the following officers at its recent annual meeting: Dr. Fred W. Mann, Houlton, president; Dr. Joseph D. Phillips, Southwest Harbor, president-elect; Dr. Nathaniel M. Marshall, Portland, and Dr. Carl Stevens, Belfast, vice-presidents; and Dr. Bertram L. Bryant, Bangor, secretary.

The Massachusetts Medical Society has elected the following officers: president, Dr. Enos H. Bigelow, Framingham; vice-president, Dr. Ralph W. Jackson, Fall River; secretary, Dr. Walter L. Burrage, Brookline; treasurer, Dr. Arthur K. Stone, Framingham; librarian emeritus, Dr. Edward H. Brigham, Brookline; and orator, Dr. David Cheever, Boston. The one hundred and forty-third annual meeting of this society has recently been held.

The American Pediatric Society has elected the following officers: president, Dr. John Ruhrah, Baltimore; vice-president, Dr. Fritz B. Talbot, Boston; secretary-treasurer, Dr. Howard C. Carpenter, Philadelphia.

The Medical Society of Virginia, the Medical and Chirurgical Faculty of Maryland, and the Medical Society of the District of Columbia has elected the following officers: Dr. Howard Fletcher, Warrenton, Virginia; first vice-president, Dr. George T. Klipstein, Alexandria, Virginia; second vice-president, Dr. Thomas M. Foley, Washington; treasurer, Dr. Robert S. Lamb, Washington; recording secretary, Dr. William T. Davis, Washington; corresponding secretary, Dr. Joseph T. Foley, Washington.

The American Dermatological Association has elected the following officers: Dr. Howard Fox, New York, president; Dr. Andrew Porter Biddle, Detroit, vice-president; Dr. Udo J. Wile, Ann Arbor, Michigan, secretary-treasurer.

Personals.—Dr. Charles W. Gould, of New York, has been elected president of the National Eugenics Research Association.

Dr. Cuthbert Christy, the British physician who discovered the tsetse fly to be the carrier of the infectious cause of African trypanomosiasis, has recently been in New York, enroute to attend the Toronto meeting of the British Association for the Advancement of Science.

Dr. Julius Levy of Newark, director of child hygiene for the State of New Jersey, has sailed for England to represent the American Public Health Association at the English Speaking Conference on Infant Mortality, to be held in London.

Dr. Charles North Dowd, professor of surgery at the College of Physicians and Surgeons, has received the honorary degree of Doctor of Science at Williams College.

Two distinguished foreign visitors have recently been in New York, Dr. John C. Bramwell, Fellow of the Medical Research Council of Great Britain, and Dr. Karl Petren, professor of internal medicine of the University of Lund, Sweden.

Dr. Arthur E. Patrell, executive officer of the Boston Psychopathic Hospital, has been appointed assistant superintendent of the Sheppard and Enoch Pratt Hospital of Towson, Maryland.

Dr. William D. Haggard, of Nashville, Tenn., is president-elect of the American Medical Association for the coming year.

Dr. George C. Ruhland is to become the administrative director of the Milbank Fund health demonstration at Syracuse, New York. His resignation as health commissioner of Milwaukee is soon to take effect.

The Salpétrière Hospital

B. SHERWOOD-DUNN, M. D.
Paris

Salpétrière Hospital at Paris is one of the most celebrated hospitals in the world. It was created by letters patent dated July, 1653. The property covers 275,450 square metres, of which 34,635 are covered by buildings, the remainder being given up to parks, gardens and boulevards. It derives its

Fig. 1.—Front elevation of the Salpétrière Hospital today.

name from certain buildings incorporated in the original letters patent which were devoted to the manufacture of saltpeter. The property comprises a city in itself of five thousand inhabitants.

December 10, 1669, Louis XIV decided to replace the small chapel in the grounds by a church that should be proportioned to the extent and importance of the property. This edifice is in the form of a basilica composed of four naves extending on each side from a central dome which dominates the hospital from every point.

Fig. 2.—The Salpétrière Hospital in the seventeenth century.

In 1684 the prison of La Force was constructed in the hospital park for the detention of women and girls of bad character picked up from the streets and remained consecrated to this usage until 1792, when thirty-five women prisoners were massacred within its walls by religious fanatics. The building was then transformed into a retreat for the infirm and its name changed to St. Vincent de Paul.

The hospital known as the Hotel Dieu, in the square of Notre Dame Cathedral, always was and still remains one of the most beautiful hospital buildings in Europe. By a decree dated July 22, 1780, the admission of insane patients into this hospital was interdicted and the architect Payne was charged with the construction of infirmaries in the grounds of Salpétrière for the reception of these patients.

At the present time Salpétrière comprises forty-four buildings. January 1, 1924, the hospital contained fifty-nine insane, 2,642 aged and infirm and 3,249 patients.

The medical service comprises one resident doctor, five visiting doctors, one surgeon, twelve interns, twenty-seven externes, one chemist and five interns in pharmacy. The secondary personnel for the care of the different departments of the hospital comprises 1,009 men and women. There is a special school for defective children and idiots. The first school for the instruction of nurses was established April 1, 1878. The hospital laundry, which forms a part of this establishment, with a capacity for handling two and one half tons of linen a day. The hospital baths were visited by 57,241 persons during 1923. The hospital is supplied with reservoirs with a capacity of 1,800,000 litres of water and all of the hospital wards are furnished with Pasteur filtres.

Each service has its laboratory and that devoted to clinical teaching has a complete installation for bacteriology, histology, pathology, etc. . . . The hospital possesses an interesting museum. It possesses also a medical library of more than three thousand volumes, which is kept up to date. Two very celebrated paintings known throughout the world and sought by many visitors annually are found, one in the council chamber of the hospital, an allegory to the Roi-Soleil Louis XIV, and the other in the lecture room of the hospital by Toney Robert Fleury representing the celebrated Pinel removing the chains from the insane. There is also a life size portrait of the celebrated Charcot whose name and fame will forever form an indelible page in the history of this institution.

Shortly after graduation from the Paris Faculty, I became attached to the service of Prof. Charcot

Fig. 3.—The Salpétrière Hospital in the nineteenth century.

and translated his first pamphlet on hypnotism into English for publication in London, during which time I lunched with the family at his residence in the Bd. Saint Germain every Sunday. Charcot set aside Sunday as a day of recreation and at these Sunday lunches were gathered the leaders in many different walks of life. Here I met Paul Bourget, Eleanora Dusé, Arthur Meyer, Montesquieu, Capus and Bougereau, Bonnet, Melba; the master was particularly pleased when I brought with me Dr. William T. Lusk. Never shall I forget seeing Charcot and Gladstone walking in the shade of the magnificent trees of his garden.

HOME FOR THE AGED AND INDIGENT

There are no poorhouses in France and certain hospitals are designated to receive these people: Salpétrière is the largest single retreat in Paris for the aged, infirm and indigent. Its beautiful parks and gardens and magnificently shaded walks and boulevards form an Elysian retreat which makes the declining years of these unfortunates the happiest of their experience.

The unfortunates who become residents of Salpétrière are no sooner admitted than they begin to appreciate the benefits they are to enjoy, of a regulated life, three meals a day, with regular hours of sleep, in comfortable beds, furnished with white linen; regular days and hours for baths and fixed rules for general cleanliness, exercise and recreation.

During their residence they are freely permitted to leave the grounds Sundays, Wednesdays and Fridays from six in the morning to nine in the evening and at any day in the week, from noon until four P. M.

In 1891 there were placed in the Esquirol division forty beds for the reception of young girls and children, morally abandoned, in charge of Dr. J. Veisin. These unfortunates are sent into the school, others into the sewing rooms, laundry or other departments of the hospital work.

Foreign Correspondence

LONDON LETTER

(*From our own correspondent*)

London, *July 4, 1924.*

ANNUAL CONFERENCE OF THE BRITISH HOSPITALS ASSOCIATION

On June 19th last Sir Arthur Stanley, head of the British Red Cross, and president of the British Hospitals Association, presided at the fourteenth conference of the British Hospitals Association, which was held in Victory House, Leicester Square, London, W. C. The first paper read was by F. N. Kay Menzies. He stated that an adequate and coordinated scheme for the prevention and treatment of disease throughout the whole country should provide: 1, for the preservation of the best features of the present voluntary hospital system; 2, for adequate accommodation, equipment, and finance of the hospitals generally; 3, for the geographical distribution of hospitals so as to avoid unevenness and overlapping; and 4, for a closer relationship between voluntary hospitals themselves, between voluntary hospitals and the various classes of hospitals provided by local authorities, and between general practitioners and all the various institutions which treated the sick. Lord Hambleden said that one point to be borne in mind was whether, if grants were made, they would be likely to seriously affect voluntary subscriptions. They wanted to know what was likely to be required of the voluntary system in the future; what accommodation would be wanted throughout the country; and how best the voluntary system could take part in any scheme which might be devised; but it would be a great mistake to believe that the voluntary hospitals would not work in any general policy that the government or the country might decide upon. Lord Armstrong believed that what was wanted was a short Act of Parliament removing the restriction imposed by law on authorities subscribing to hospitals. Mr. H. M. Crouch moved a resolution to the effect that the time had come to make a careful, comprehensive and detailed survey and study of the hospital situation in Great Britain, and to formulate a coordinated scheme for the prevention and treatment of disease throughout the whole country. The motion having been seconded by Mr. C. E. S. Flemming, Bradford-on-Avon, Mr. Gilbert Shepherd, Cardiff, proposed that the Council should be requested to give careful consideration to the important points raised by Dr. Menzies, and to take such action thereon as they might deem desirable in the interests of the voluntary hospitals. Another motion followed by Mr. Arthur Griffiths, Ipswich, who suggested that they should ask the Voluntary Hospitals Commission to make further inquiries. The chairman thought that the association should make the inquiries, and not the commission. He suggested, therefore, the addition to Mr. Crouch's motion of the following words: "And that the council of the association be instructed to consider how the survey can best be made, and to give all the assistance in its power to any body that makes it." The suggestion was accepted, and Mr. Crouch's amended resolution was adopted.

TRAINING OF NURSES

Sir Wilmot Herringham, consulting physician to St. Bartholomew's Hospital and chairman of the council on registration of nurses, took as his subject the training of nurses. He pointed out that when he was young many ladies took up the nursing profession, partly, he supposed, due to the enthusiasm created by Florence Nightingale, but chiefly because it was the only means of earning a living which educated women could then pursue. At the present moment a woman might be a solicitor, a barrister, a doctor, a minister of religion, or even a member of Parliament. It was not surprising, therefore, that women did not enter upon a poorly paid and laborious profession such as nursing. Mr. John Barker Grimsby moved a resolution requesting the committee of the B. H. A. to consider the ruling of the General Nursing Council as to the number of medi-

cal beds, and also the medical cases, at present required to obtain their certificates. The motion was carried.

ENGLISH SPEAKING CONFERENCE ON INFANT WELFARE IN LONDON

Mr. Wheatley, British Minister of Health, gave the presidential address at the opening of the third English Speaking Conference on Infant Welfare at Caxton Hall, Westminster, London, on July 1st last. There were seven hundred delegates present, including representatives from British public authorities and voluntary institutions, governments and organizations in the oversea dominions, and health associations in America. Mr. Wheatley stated that maternity was the very source of the nation and good motherhood was essential to the welfare of the children. The majority of these children must be brought up by their mothers in their own homes. It was, therefore, of the greatest importance that the mothers should be sufficiently strong physically, and well educated and trained mentally, to make them the best mothers a nation could possess. Their duty was not to relieve the mother of her functions and duties but rather to train and help her to perform them satisfactorily. Nothing of a much more evil character crept into our national policy than the idea that any public organization could possibly take the place of the mother in a civilized community. The care of the mother was the first consideration for a conference of the kind which was being held. His department looked for good results from the school medical service which was now growing, and to the training which was given in the schools. Things would never be satisfactory until they had homes in which it was safe for children to be born.

He hoped that in the near future, as a result of the campaign in which they were now engaged, there would be an improvement in the midwifery services. The services of the midwife, and medical advice, should be available where it was required, and it should be the business of local authorities, or voluntary agencies, to see that when advice had been given that the means existed for making it effective. The care of the infant was an important work, and it was gratifying to find that there had been a fall in infant mortality during the past generation. In 1900, the infant death rate of England and Wales was 150 per 1,000, whereas in 1923 it was 69 per 1,000. It was true that there were black spots. While there was an average infant death rate of 69, there were certain areas, particularly in the poor districts of industrial centres, where the infant death rates ran into three figures. Mr. Wheatley emphasized the importance of making mothers familiar with welfare work. They had, he said, two thousand welfare centres in England and Wales. He hoped the time was not far distant when they would have a welfare centre within the reach of every woman, not merely in the towns, but in the villages.

Dr. G. F. Still afterwards presided and the subject of Education in Relation to Maternity and Child Welfare was considered. Colonel R. J. Blackham, M.D., read a paper relating to work in India, and said there was a quickening of the public conscience in that country of today, and that a definite movement was in progress to combat the social and semireligious customs which were responsible for the terrible dangers which had hitherto attended childbirth in India.

Dr. Ethel Cassie, of Birmingham, spoke on the training of midwives. She said the present high rate of maternal mortality and the high neonatal death rate among infants made it imperative to obtain early reform in midwifery training whether for nurses or doctors. Careful consideration, too, of early deaths in infants showed that little could be done apart from antenatal care and improved midwifery, and as long as the neonatal deathrate was unchecked it would be impossible to obtain a really satisfactory reduction of the infant mortality rate.

LETTER FROM PARIS

(From our own correspondent)

Paris, *May 25, 1924.*

Speaking under the auspices of the American Women's Club at the Union Interalliée, in Paris, Dr. George E. Vincent, president of the Rockefeller Foundation, chose as his subject An Adventure in Public Health and told of the fight against yellow fever. He explained that a League of Nations in Central and South America had been formed to banish yellow fever, and then traced the fight against the disease, which started during the Spanish War, when, under Walter Reed, four American physicians went to Havana to investigate the causes of yellow fever. They confirmed the opinion of Dr. Finley, a Scotsman, that the fever was transmitted by mosquitoes. Dr. Vincent told of the work of General Gorgas in eliminating yellow fever in Cuba and later in the Canal Zone, and, after his retirement from the Army, how he went to Central America as head of the International Health Board of the Rockefeller Foundation and established a League of Nations to eradicate the disease. The results of this pioneer and later work are that no yellow fever was reported from South America or Mexico during the past year.

"The conquering by science of animal grafting in the last few years has opened immense horizons," declared Dr. Serge Voronoff before a large audience of scientists gathered at the Sorbonne. "In fact," continued Dr. Voronoff, "man is now master of life. We cannot say that he is master of everlasting life, for as yet our experiments in rejuvenation are too new and the patients, although completely rejuvenated, have not had time to live long past the ordinary span of life. But there is every reason to believe they will. Why should there be a feeling of shame at undergoing a rejuvenation operation? Why combat the forward march of science?" The speaker then showed a startling collection of photographic slides portraying his various patients before and after their gland operations. One elderly Englishman appeared feeble to the point of senility; his eyes were faded, his face wrinkled with sagging muscles. Then a slide was flashed on the screen showing him one year after, with smooth, fresh face, flashing eyes—a young man once more. Next came the picture of a bitch, a dismal old creature, with her tail hanging dejectedly between her legs. The

next slide showed her one year later, sleek, gay and happy, and in the straw beside her six puppies.

THE OLYMPIC GAMES

Marquis de Polignac, as guest of the American Club of Paris at its weekly luncheon, gave one of the most interesting talks that has been heard by the club during the year on the timely subject of the Olympic Games. This pioneer in the revival of French sport, speaking from his long connection with the Olympic Games and as a member of the International Olympic Committee, gave high praise to the part played by America in reviving the ancient Greek custom of international athletic contests. The speaker's straightforward talk, which was in English, deeply impressed his audience. At the close of his address, it was announced that Marquis de Polignac had been elected a member of the American Club.

An aspect of the games which had not been widely appreciated up to the present was pointed out by the speaker when he called attention to the significance of the literary and artistic contests which will accompany the athletic sports at the coming Paris games.

"Following the ancient Greek custom," Marquis de Polignac said, "the arts, literature and music will be represented in addition to athletics at the international meeting in Paris. You remember that in ancient times, the greatest philosophers, litterateurs and sculptors gathered at the Olympic contests, and rivalled each other in showing their best work. It was on these occasions that the Greeks created the art which is now known all over the world. So in Paris, during May, June and July, there will be given at the Théâtre des Champs Élysées a special series of performances, including music, dancing, comedy and tragedy. Some of the greatest companies of the world, both French and foreign, will appear, while at the Grand Palais there will be an international exhibition of painting, sculpture, architecture and all forms of work inspired by the true ideal of sport. We have already received from many countries a large number of very good compositions in competition for the prizes of music and literature."

Marquis de Polignac, after reviewing the history of the Olympic Games, ancient and modern, assured Americans of a warm welcome from his countrymen, and he predicted a record breaking number of visitors from the United States to France this summer. He added that it was largely through American support that it was possible to revive the games at Athens in 1896.

"The Olympic idea," he said, "has always had a great success in the United States. The efforts which your countrymen are making in assembling and training a team to send to Paris is enormous. You will have 300 or 350 athletes here who will be almost unbeatable. According to figures I have been given at the Prefecture of Police there will be 350,000 American visitors to France during the summer and I am sure most of them will be here for the Olympic Games. I assure you that we in France very much appreciate Americans coming in such great numbers, and especially you taking such a wholehearted interest in the Olympic Games."

VIENNA LETTER

(From our own correspondent)

VIENNA, *June 2, 1924.*

EXAMINATION OF SCHOOL CHILDREN

Dr. Edmund Nobel, from the children's clinic of Professor Pirquet, has examined anthropometrically 1,836 children of school age confined in various institutions. He found the height in standing as well as sitting posture of the public school children greater than the height of the children living in institutions. The body weight of the institutional children is larger than that of other schoolchildren of the same age. In other words, while the growth in width is not disturbed the growth in length is disturbed. He concludes from his findings that institutional children should be fed more on food containing vitamine A, for instance, codliver oil.

AUSTRIAN RENAISSANCE

Just as the Austrian people at large, in spite of all losses suffered, are waking up to reassert their artistic talents, their idealism and love to create works of art—as evidenced by the various expositions for modern arts and crafts in the Austrian Museum, or the semiannual industrial exposition, called *Messe*—so the medical profession and men of science are beginning to show signs of a certain renaissance.

The anthropologicoethnographical collection situated in the state museum for natural history contains about eight thousand objects; it represents one of the richest collections of its kind in the world. The director of this department thought that it should be exploited scientifically and form a focus of research. Following the example set by Lundborg in Sweden, there will be arranged not only a modern craniological exposition but also an institution for racial biology. This new institution will pay special attention to research work in matters pertaining to the constitution and heredity of man as well as of domestic animals.

OCCULT PHENOMENA

The war has rendered the people's mind more prone to believe in mysticism; no wonder, then, that the study of the socalled occult phenomena has come into vogue. The German school of medicine as well as the Viennese school were always the most ardent disbelievers, while London had its society for psychic research many years ago and Paris, under the leadership of its most noted psychiatrists and neurologists, founded an institution for metapsychic phenomena in 1917. When Schrenck-Notzing, the psychiatrist of Munich, a few years ago created such a sensation by his book on occult phenomena, he gave a new impetus to the serious study of the subject. His photographic reproductions of the phenomena taken under all possible precautions, with the help of flash light, from six different places in the laboratory room, simultaneously and automatically, were quite convincing. He went even so far as to offer a standing price of twenty thousand francs to any trickster who would produce the same phenomena under the same conditions of control. The

offer has not been taken up by anybody as yet. And now Dr. Holub, a former pupil of the famous Professor Wagner von Jauregg (whose latest work is the cure of paralysis by means of intravenous injections with malaria tertiana blood), dares to announce, openly and convincingly the existence of similar phenomena. Dr. Holub, who since 1913 has been the physician in chief of Steinhof, an institution for curable as well as incurable mental diseases, with a capacity of three thousand beds, has had the courage to take into his home the famous medium, Willy Schneider, a boy, aged twenty, who is an unassuming and industrious dental technician. Since April 1923 he has had about sixty seances with the boy, inviting each time a few of the most prominent physicians, surgeons and scientists. These phenomena consist of medioplastic substance emanating from the body of the medium, who also moves distant objects not touched by anything or anybody in the room. Dr. Holub, in the face of the known attitude of the Viennese medical school, which had put its taboo on anything and everything occult, has openly declared himself converted from a Saul into a Paul, and while appreciating scepticism and just criticism in such matters, is seriously endeavoring to solve the new problems presented.

GASTRECTOMY

Another man, who has done work worth while, is Professor Finsterer, the surgeon, who performs gastrectomies under local anesthesia. In a paper delivered before the Medical Society of Vienna, early this summer, he stated that resection of the stomach shows no larger mortality than does simple gastroenterostomy; in a series of 236 resections for ulcer of the duodenum he had 3.4 per cent. mortality, which has been reduced—in the last 198 resections—to two per cent. He gets ninety-four per cent. good results, as compared with sixty-two per cent. cures or improvements after simple gastroenterostomy by Payr or thirty-seven per cent. by Haberer.

THE GOITRE PROBLEM

The goitre problem in Austria is a serious thing. About seventeen per cent. of the children between the ages of five to nine years, and twenty-nine per cent of the children from thirteen to eighteen are affected. The use of iodized table salt, which—as controls show—has produced good results. Wagner v. Jauregg has been making this claim in Vienna as far back as 1898 and finally succeeded in having the public health office of Austria decide upon the sale to the public of iodized table salt. This iodized table salt is now used in all State institutions—to the exclusion of any other table salt—and its use in all other State institutions, reformatories, orphanages, penitentiaries is recommended. To inform the whole population of Austria of the Government's intentions a million reprints of a popularly written pamphlet by Professor Wagner Jauregg on *Goitre and the New Table Salt* is broadly distributed.

RABIES

Dr. Schürer, in a paper read before the Medical Society in June, 1923, gave an interesting picture of the cases among the population of Vienna. Statistics show that 93.13 per cent. of human rabies are due to infection from dogs, 5.75 per cent. to that from cats. As preventive measures are recommended: compulsory wearing of dog tags, increase of taxes on dogs, compulsory muzling, preventive vaccination of dogs with Virus fixe.

ANGINA PECTORIS

Professor Eppingers has made the startling announcement, before the Congress for Internal Medicine, in April, 1923, relating to the cure of angina pectoris. This syndrome (paroxysms of retrosternal pain radiating along the ulnar nerve or into the shoulder or neck, coming on mostly after psychic or physical exertions, accompanied by a state of anxiety and pallor, but—in contradistinction from cardiac asthma—never causing dyspnea or heart alterations) has been considered by Eppinger an "Aortalgia in the sense of Rudolf Schmidt," in other words: due to a state of excitation in the sensory (sympathetic) branches within the aorta wall. The theory of Mackenzie did not seem acceptable to Eppinger, because the post mortem findings quite often showed no alteration in the coronary vessels. Inasmuch as the depressor nerves (according to Cyon and Ludwigs studies in 1866) is the "love and sensory nerve of the heart," conducting every irritation from the aorta, centripetally, the cutting of this nerve—according to Eppingers hypothesis—should stop the painful paroxysms. Working on this hypothesis Dr. Hofer operated on six patients from August, 1922, to April 4, 1923. He performs the operation first on one side—regarding as depressor only those branches which run freely into the chest cavity or after branching off from the superior laryngeal nerve or the vagus, again joining the latter—and, after the one side has healed completely and the larynx has been found intact he repeats the operation on the other side. One must, first of all, take care not to injure the vagus, because even the most insignificant squeezing may lead to paralysis of the vocal cords or to anesthesia of the larynx with fatal bronchopneumonia as a sequel. The effect of the operation in the remaining five cases was startling: the patients were freed entirely from their paroxysms.

ETHICS AND MORTALITY STATISTICS

The reawakened sense of ethics among the profession here takes a humorous turn at times! The Vienna Medical Society informs its members that it would be considered unethical and penalized accordingly if its members entered into any contract for having their names inserted in the city directory or in the appendix of the telephone book.

The general improvement in social economics is apparent everywhere, also in the statistics of births and deaths. In 1919 there were in Austria 110,822 living children born, in 1921 141,728—an increase from 17.96 per thousand inhabitants to 22.40. The number of deaths in 1919 was 125,449, in 1921 only 104,599, a decrease from 20.33 to 17.06 per thousand. How different are these same figures in Germany! About half of the number of babies born there are put into orphanages, in spite of the fact that the number of births has sunk to one third of its former rating.

LATIN AMERICA LETTER

(From our own correspondent)

CANAL ZONE, *June 4, 1924.*

ANIMAL LIFE IN PANAMA

The average visitor to the Isthmus of Panama sees relatively little of what is really going on. To him it is just a sort of superheated garden, which is very badly kept for the most part, and contains here and there a few ruins or picturesque bits of native life. He is herded about with a lot of tourists who apparently have just sufficient travel sense to go where they are shoved and whatever impressions he may take away with him are pretty apt to be blurred and incorrect.

What a pity! Here is a country which teems with historical interest—there is a wealth of botanical, zoological and ethnological material all about —there is an opportunity every few feet to study insect life—there are myriads of fish in the waters and snakes in every jungle—yet the average visitor and the average dweller of this region never see any of these things. At present, according to Mr. James Zetek, the entomologist of the United States Department of Agriculture on the Canal Zone, there are no less than one hundred and eighty distinct species and varieties of mammals in the Republic of Panama, many of which are extremely interesting. Some are very rare while others point to interesting happenings in the more recent geological history of this region. The fauna of Coiba Island, for example, is very distinct from that of the mainland. Some of the higher peaks in the Serrania de Tabarsara and similar country are today zoological islands harboring certain species not found elsewhere, or whose closest relatives now live in places quite distant.

More intensive scientific investigations are necessary, and when these are done, the number of species will no doubt be found to be about three hundred. There are represented in Panama three main climatic zones, the lower tropical, both humid and arid, the upper tropical and the temperate. Each has its distinct fauna, but the line of demarcation between them is not sharply drawn. There are species, for example, which live in both the lower and upper tropical zones but many of these are continued to the upper portion of the first and the lower portion of the second. The same thing occurs in the upper tropical and temperate zones.

Dr. E. A. Goldman, in his work on zoology, gives an historic sketch of those who have in the past studied the mammals of this region. The first was Lionel Wafer who did his work in the latter part of the seventeenth century; Thomas Bridges came in 1856 and the Dane, Orstea, in 1872; Enrique Arce, of Guatemala, collected for Salvin and Goldman, two Englishmen who did most valuable pioneer work on the biology of Central America and who edited the monumental *Biologia Centrali Americana,* which today is the backbone of our knowledge of the flora and fauna of the entire region. This huge masterpiece consists of sixty-five royal quarto volumes, citing and describing over eleven thousand plants and almost thirty-nine thousand species of animals. Of the latter, over nineteen thousand were new to science. The publication of this gigantic work began in 1879 and ended in 1915.

Real modern studies were not begun until March, 1900, when Wilmot W. Brown, Jr., launched his studies which were followed by such excellent collectors and students as Batty, Watson, Thomas Barbour, Osgood, Anthony, Shiras, Richardson and Goldman. In addition many of the employees of the Panama Canal, themselves amateur collectors, have sent mammals to museums in the United States.

Of the monkeys, the highest of our mammals, there are nine distinct kinds, belonging to six genera and six distinct families. There are the small titi, the night squirrel (marmosets), two kinds of howling monkeys, one of which is peculiar to Coiba Islands, two white throated capuchias, a red spider monkey and a black spider monkey, the latter being found only in the Darien country.

The insectivora, such as shrews and bats, are represented by only one shrew in the highlands of Panama and by at least forty-five different kinds of bats, representing thirty-six genera and six families. There are longnosed, white, bulldog, mastiff, flatnosed, longeared, smalleared, longlegged, fringelipped, spearnosed, vampire, false vampire, and many other different kinds of bats here.

The carnivora are represented by the various cats or socalled tigers, an otter, a skunk, a grison, a tayra, a weasel, two kinkajous, two Bassaricyons, a coati, two raccoons, a Bassariscus and a bushdog. The cats are represented by five species—the jaguar (often erroneously called a tiger), the ocelot or manigordo, the longtailed spotted cat, the puma (the socalled leon) and the yagouaroundi, the Panama gray and red cats. Some of these cats are very vicious and frequently numerous.

There are no less than seventy-four species and varieties of rodents in this area ,including thirty-seven genuine rats and mice, three pocket gophers, six pocket mice, five spiny rats, seven agontis and pacas (one of which is the Capibara, the largest rodent in the world), two porcupines, ten squirrels, including six pygmy squirrels, and four rabbits.

There are two species of tapir, three peccaries (wild pigs) and three kinds of deer. Two of the peccaries are the collared variety and the other is the whitelipped. Of the deer, two are whitetailed, one of which is peculiar to Coiba Island. The third species of deer is the common forest deer or brocket, known also as the cabra de monte.

Manatee are found in Chirqui Lagoon but none are known to exist on the Pacific side of the Isthmus.

The armadillos, anteaters and sloths form another big group, which includes two armadillos, the fourtoed and the fivetoed, three anteaters, the twotoed, the threetoed and the giant, and three sloths, two threetoed and one twotoed.

There are fourteen species and varieties of marsupials or opossums belonging to six genera in Panama. They are especially common around human habitations where they are harmless but rather more or less of a nuisance.

A movement is now on foot to create a zoological garden, at or near Old Panama, not only to exhibit the various mammals herein described but also collections of reptiles, birds, etc. This will not only be of great interest to the casual visitor to the Isthmus but to scientists who would enjoy seeing in this easy way such valuable zoological material.

Book Reviews

PSYCHOPATHOLOGY

Common Symptoms of an Unsound Mind. A Guide for General Practitioners. By G. Rutherford Jeffrey, M.D., F.R.C.P.E., F.R.S.E. With Foreword by Sir James Crichton Browne. New York: Paul B. Hoebler, Inc., 1923. Pp. 268.

The Recreating of the Individual. A Study of Psychological Types and Their Relation to Psychoanalysis. By Beatrice M. Hinkle, M.D. With Illustrations. New York: Harcourt, Brace and Company, 1924. Pp. 464.

The intentions of the author were no doubt of the best when he planned his work on the *Unsound Mind,* but just how useful it may be to the general practitioner, for whom it was designed, is somewhat dubious. It is not so much a question of the validity of Jeffrey's statements as one of their form. To the reviewer, it seems that too thin a slice had been cut from the cake to determine its quality. It is rather difficult to judge his somewhat novel way of handling the problem of psychopathology. The likelihood of its leaving the average reader in a state of bewilderment seems rather strong. This does not include the experienced psychopathologist, but to him the book would have little real value.

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In spite of so excellent a champion as Doctor Hinkle, Jung's recent theories fail to convince the careful worker in psychopathology. The book is no doubt a conscientious piece of work and in spots contains many stimulating ideas, but on the whole it shows a rather impossible attempt to reduce behavior to a rather nebulous formula which is elastic to say the least. It seems as though Jung had taken a tiny fragment out of Pandora's box of human behavior and made a sort of Uneeda Biscuit formula out of it. The formula in this instance is subjective-objective intra-extravert. This is all very nice but what value it may have in getting at basic values seems highly problematical.

PSYCHOTHERAPIE

Psychotherapie. Charakterlehre, Psychoanalyse, Hypnose, Psychologik. Von Arthur Kronfeld, Dr. Med. et Phil. in Berlin. Berlin: Julius Springer, 1924. Pp. 260.

A remarkable on the fence piece of work to come this day from Germany. A scholastic effort to blend many halfbaked ideas into a fine pie. Just what useful function a work of this kind may serve is somewhat of a mystery.

PSYCHIATRY

Textbook of Psychiatry. By Prof. Eugen Bleuler, Director of the Psychiatry Clinic, Zürich. Authorized English Edition by A. A. Brill, Ph.B., M.D. New York: The Macmillan Company, 1924. Pp. xviii—635.

Bleuler's work comes with the authority of one rich in experience in direct contact with psychiatric problems and possessing a wide acquaintance with the work of others in the same field. Much more might have been said regarding compulsion neurosis which would have set it for the reader much further on the road of understanding and effectual treatment than the older descriptions made possible. Bleuler discusses it as if it still remained in this unillumined region. Here, as in other places, a fuller consideration of psychoanalytical experience would have furthered the subject. Bleuler accepts and uses psychoanalytical principles in part. The book is a worthy example of the modern spirit of investigation and progressive application of the interpretative point of view. Brill has rendered another distinctive service in bringing this work to the English reader.

PSYCHOANALYSIS

Psicoanalisis. Por Manuel Guevara Oropesa. Tesis que presenta para su examen general de medicina, cirugia y obstetricia. Mexico: Imprenta Victoria, S. A., 1923. Pp. 78.

Oropesa has written an interesting work concerning the place of psychoanalysis among modern methods of explaining and treating mental and nervous disorders. He discusses briefly the interpretations of the various schools. He reviews also in a general way the mental phenomena which are to be considered, consciousness and the subconscious, dissociation and the dream. He has a chapter also upon the neurosis and its close relation to the dream. He presents a more extensive chapter upon the practice of psychoanalysis. He reveals throughout the study an appreciation of psychoanalysis as a method of approach to mental problems, the importance of which cannot be overlooked, thus bearing strong testimony to its practical value. Yet he frankly avows dissent from its theories, at least as he views them, and he questions seriously the full scientific and therapeutic value which is attributed to psychoanalysis. Like most critics he seems to have missed the broader implications of certain points.

THE INSANE CRIMINAL

Insanity and the Criminal. By John C. Goodwin. New York: George H. Doran Company, 1924. Pp. 308.

This is a worthy heterodox view of the psychology of the criminal. The author has been catholic in his references, one might say to the point of a discriminating eclecticism. On the whole the book is interesting, well written, and presents the entire subject in a fluent yet highly intelligent way. More critical readers will no doubt regret that the author did not cultivate his ground more deeply, even though at the cost of a lessened acreage.

PROBLEMS IN MENTAL NURSING

Handbook for Mental Nurses. (Handbook for Attendants on the Insane). Seventh Edition, Seventy-Ninth Thousand. Published under the Authority of the Medico-Psychological Association. Chicago: Chicago Medical Book Company, 1923. Pp. xiii—615.

This book proves itself true to its former character as an authoritative presentation, simple yet comprehensive, of mental disease and the nurse's relation to it. It contains a brief general discussion of the nurse's personal requisites as to character and point of view toward the task. It presents a review of the various medical facts which form a background to this as to any other branch of nursing, bodily diseases and disorders to be met with, matters of diet and other measures which must be known to the nurse. The more obvious manifesta-

tions of consciousness are touched upon but special emphasis is given the unconscious activity as the basis of mental disturbances. Unquestioned testimony is given to the service which psychoanalytical investigation of unconscious content and mechanisms has rendered in the field of mental disorder.

THE NERVOUS SYSTEM

ANATOMY OF THE NERVOUS SYSTEM. From the viewpoint of the Development and Function. By Stephen W. Ransom, M.D., Ph.D. Second edition, revised. With 284 illustrations. Philadelphia and London: W. B. Saunders Company, 1923. Pp. 421.

In the second edition of Ransom's splendid textbook, which really includes a working laboratory manual, few changes have been made. The most important of these are the addition of certain clinical material which tends more clearly to portray the functional workings of certain nerve tracts. This is a commendable addition, and in line with the idea which has been so ably set forth in Tilney and Riley's classical work.

MOBILIZING THE MIDBRAIN

Mobilizing the Midbrain. The Technic for Utilizing Its Latent Power. By Frederick Pierce. New York: E. P. Dutton and Company, 1924. Pp. 259.

A book that has no scientific value, being a hodge podge of a little of this and a little of that. The book can do no harm, for anyone who could be influenced by material of this nature could get nothing out of the many worthy books on this subject which are procurable.

HOSPITAL ORGANIZATION AND MANAGEMENT

First Steps in Organizing a Hospital. By JOSEPH J. WEBER, M.A. New York: The MacMillan Company, 1924.

Hospital Organization and Operation. By FRANK E. CHAPMAN. New York: The MacMillan Company, 1924.

These two volumes are the first of a series of projected handbooks on various phases of hospital organization, construction and management, written by men of mature experience in the hospital field.

Mr. Weber is exceptionally equipped to prepare the volume which has appeared under his name. As editor of *The Modern Hospital* and formerly executive secretary of the Committee on Hospitals, State Charities Aid Association of New York, he has been in close touch with the problems of which he writes. In the preparation of his book the author has had in mind particularly the organization of the typical community hospital rather than the large institution in a metropolitan district. The introduction is devoted to a presentation of hospital statistics, their number in proportion to population, their distribution, and the like. In the following chapters Mr. Weber points out the great importance of careful planning by the community in the building of its hospitals. There must be a careful community study as to the number of beds that are needed, the type of institution that will be most useful, the location, as well as ways and means of maintaining the hospital once it is completed. He then discusses practical means which have stood the test of experience of enlisting community interest in the project, of authorizing and financing a preliminary survey, of procuring a charter and organizing a board of trustees. Finally the methods of financing the building operations are presented. The volume is a cheering commentary on the change that had come over hospital planning in recent years. Instead of a hospital being a vicarious outgrowth, born often of the whim of some wealthy benefactor, it is envisaged as a product of communal interest built and maintained by the community for the benefit of all its members. It is to be hoped that Mr. Weber's volume will find a large circle of readers among all those who are interested in organized community betterment.

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Mr. Chapman, who is well known as a man who has contributed largely to the introduction of business methods in hospitals, is the author of the volume on *Hospital Organization and Operation.* Yet these efficiency methods are not an end in themselves. They are essential to enable the hospital to achieve, as Mr. Chapman says, its "ideal of service." In the compass of 265 pages every phase of institutional activities are discussed in broad outline. Chapters are devoted to principles of organization, administration, medical staff, nursing, dietary, social service, purchase and issuance, and similar topics. There is a liberal use of graphic charts and sample forms which will be found valuable. In spite of the comprehensive character of the book it abounds in practical detail, yet the author never loses sight of the broader aspects of the hospital problem. In his words "the hospital in its truest sense is an ideal of service, conceived and dedicated to combat disease, including within its operation all of the facilities known to humankind for the alleviation of suffering. Its operation is predicated upon a group of community problems and an inclination on its part to meet the demands of community service that may be made upon it."

Mr. Chapman's book should be in the hands of every hospital superintendent and trustee.

COMMON LAW

The Spirit of the Common Law. By ROSCOE POUND, Carter Professor of Jurisprudence in Harvard University, Dartmouth Alumni Lectureships on the Guernsey Center Moore Foundation, Season of 1921. Boston: Marshall Jones Company, 1923. Pp. 224.

This book contains an instructive survey of the history of common law as its theories and practices have been developed under the Anglo-American traditions. The debt of our common law to the older Germanic traditions, its contact with Roman law and the only slight influence received from this are touched upon in the presentation of the principles within which our law has had its existence. The fixed conceptions which have proved a hindrance in its past development and the gradual yielding of these to more flexible points of view are discussed with a broad openmindedness. This is evidence of the author's wide and deep knowledge of his subject and the quiet fearlessness with which he can look upon changes. These he welcomes as they bring our common law to a more concrete and a more adaptable service both to the individual and to the society in which he moves. Pound reveals how stubbornly in the legal profession the mind has clung to a conception of arbitrary law and of an abstract right for the individual. It is only slowly relin-

quishing these principles which it has sought by all the means of philosophy and history to establish. It is more nearly approaching that view which the writer unhesitatingly adopts, that law is the result of the working of many causes, something created by society in its own development and for the interests of the individual only in his relation to that society.

DIAGNOSIS

Aids to Medical Diagnosis. By Arthur Whiting, M.D. Senior Physician to the Prince of Wales's General Hospital. New York: William Wood and Company, 1924. Pp. viii, 1-177.

The author has succeeded in compressing within a small compact volume a great deal of what may be helpful in general medical diagnosis. The language is concise and clear, and the little book can serve not only the medical student as a condensed epitome of the larger textbook, but also as a vade mecum to the busy practitioner by refreshing his memory on salient points and prominent landmarks of disease. We note particularly that to the diagnosis of disease of the nervous system—the haziest and therefore the most difficult one for both students and practitioners to find their bearings—has been allotted the large space that its importance demands.

ROCKEFELLER INSTITUTE STUDIES

Studies from the Rockefeller Institute for Medical Research. Reprints. Volume XLVIII. New York: Rockefeller Institute for Medical Research, 1924.

These studies, consisting of almost six hundred pages, are the result of gathering together the reprints from the Rockefeller Institute for Medical Research, most of which appeared originally in the *Journal of Experimental Medicine* or the *Journal of Biological Chemistry,* and have already been abstracted in this journal. The subjects covered include pathology and bacteriology, biophysics, chemistry, experimental surgery, general physiology, animal pathology, and a few studies from the hospital of the Rockefeller Institute on diabetes, the lung volume in heart disease, and the question of sensitization of joints with nonhemolytic streptococci.

THE WORKS OF PARACELSUS

Theophrast von Hohenheim gen. Paracelsus Sämtliche Werke. Herausgegeben von Karl Sudhoff o.ö., Professor der Medizingeschichte an der Universität Leipzig und Wilhelm Matthiessen Dr. phil. zu München. I. Abteilung, Die medizinischen, naturwissenschaftlichen und naturphilosophischen Schriften. Sechster Band, Herausgegeben von Karl Sudhoff. Aus dem Jahre 1528 (Kolmar in Elsass) Mit Titelbild und 5 Tafeln. München: Otto Wilhelm Barth, 1922.

This first volume to appear under this extensive title gives promise of the valuable work which the editors have planned to put forth. They have chosen the sixth volume as the first to be issued since this and the volumes succeeding it in the series will contain the important works of the mature Hohenheim. Numerically preceding volumes will be devoted to the earlier writings and work of the famous physician and thinker. This volume is devoted to his discussion of wounds and open injuries and his extensive treatment of the subject of syphilis. The writings are faithfully reproduced in the author's own style, in authorship as in orthography. His style of writing is indeed a model in clearness and simplicity which scientific writers in his own tongue as well as in our own would do well to study and emulate. The complete edition of Paracelsus's works in this form, with the valuable discussions concerning the history of these writings and their first publication, will constitute a worthy addition to any medical or literary library. The reproduction of title pages, of original illustrations and manuscripts gives further testimony that the editors have entered upon their task with a true appreciation of its value from various cultural points of view.

COUNTRY PEOPLE

Country People. By Ruth Suckow. New York: Alfred A. Knopf, 1924.

Life, as truthfully reproduced as an album record. Commonplace, workaday life, and the incidents likely to occur in it. Miss Suckow's photographic ability has been noted by other reviewers. A few landscapes, family groups, local news clippings, comparable to the framed landscapes, family groups, and records of the parlors of just such country people as she describes. These make up her book.

But the connecting links between the vivid scenes are weak. There is narrative but little action. It seems incredible that in such lives as she describes there should be no drama even to the actors. What of the feelings of Emma Stille in youth, in marriage, in sorrow? In a chronicle of the minute details of their external lives, why so little of the inner world? One can guess more or less what is going on under the surface. But one cannot feel it. Some say that there are people who accept all and do not ponder over the ways of Fate. But what of the vast, empty spaces in such brains? Is there really nothing more poignant that the day's needs, and duties?

The book, we feel, with more of the human heart in it would be powerful. As it is it is interesting and good. Too good to be thrilling!

A MYSTERY STORY

Darkened Windows. By Cornelia Kane Rathbone. New York: D. Appleton & Co., 1924. Pp. 265.

A triple-decker mystery story that is closer to possibility than many we have read. However, it begins with the time honored convention of murder, against which convention one would like to inveigh. Not that the figures of crime are increased by the thousands of murder tales in circulation, but the fact that countless readers pant for the stories betrays a sadistic trend in the race that is not being improved by this particular brand of fantasy.

To return to our story: The bracelet plot, the murder plot, the radical plot, twist and weave into a chain of circumstance that holds attention for hours at a stretch. And there is the amateur detective who in the long run does unravel the mystery. Who committed the murder, what happened to the misplaced bracelet and what have all these elements to do with the nationwide radical plot? Nothing—and everything. Each is a thing by itself, and yet by the freaks of association they are inextricably blended.

There may not be the punch of the professional mystery story in this book, but there is undoubtedly good material, original theme, and straightforward handling.

Medicoliterary Notes.

In a recent address, Dr. Edwin L. Ash, of London, specialist in nervous diseases, stated that some of the fogs experienced by London during last winter were real varieties of mustard gas. They contained all the acid and irritating ingredients of poison gas and affected the delicate membranes of the throat and respiratory organs. Many children contracted actual fog poisoning.

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Montmartre in Paris has a café in which a sign hung in a conspicuous place last winter reading as follows: All conversation about the grippe is strictly forbidden.

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A comprehensive survey recently made by the Eyesight Conservation Council of America has revealed that more than sixty per cent. of the elementary and secondary school children in the United States have eye defects that warrant correction. Six million children, or twenty-five per cent. of the total public school population, are suffering from impaired vision to such an extent as to handicap them seriously in getting an education. The Eyesight Conservation Council, organized three years ago for the purpose of conducting a national campaign to arouse public interest in the problem of eye hygiene, has three main objects in view: 1, To correct defective vision; 2, to procure nation-wide eye protection against injury; 3, to insure adequate provision for proper illumination.

* * * *

Dr. Gustav Gaertner, a German professor, has conceived the idea that the early hours of the morning might well be devoted to radio broadcasting for the blind exclusively. A single speaker could thus reach the blind and those with defective vision throughout a very large area. He suggests finding out what such persons would like to hear through a round robin addressed to the blind themselves. He himself suggests a program of important political and current events, followed by an hour of reading from good literature, both fiction and more serious works, and possibly a third hour of simple scientific information.

* * * *

A new device has recently been developed by the U. S. Bureau of Standards whereby the electrical conductivity of sea water may be measured and indicated in terms of its saltiness. This new application of electricity to the safety of those at sea is expected to be of great value in giving warning of the proximity of icebergs, since these often greatly dilute the saltiness of the water in their vicinity.

* * * *

A brilliant young Hungarian biologist, Theodor Koppanyi, after a long series of investigations and experiments, has succeeded in successfully grafting new eyes on animals, including not only the lower forms such as frogs and fishes, but also rats and rabbits. The scientist reports that not only did the eyes accommodate themselves to their new quarters by physiological growth, but that the animal recovered vision after the wound healed.

* * * *

Einstein conceives of all education as a free and living process, with no drilling of the memory and no examinations, but mainly a process of appeal to the senses in order to draw out delicate reactions.—*Havelock Ellis in The Dance of Life.*

* * * *

Richard Strauss seems to have attained the very pinnacle of that realistic musical interpretation in which he indulges so freely and successfully in his *Whipped Cream Ballet* recently performed in Vienna. The plot is based on the old and too familiar story of the boy who has eaten too much, and as a consequence has a nightmare. The German critics have declared the music to be delightful and that the first audiences were enraptured.

* * * *

Lecturing at the Royal College of Surgeons, Sir Arthur Keith, the distinguished English anthropologist, has declared that the face of modern man is growing downward and that corresponding changes are taking place in the upper bones of the face. Only part of the Western race—from twenty to thirty per cent.—is affected. . . . Sir Arthur does not attempt to account for all this. It does not even seem to occur to him that postwar conditions give most people in the modern world pretty good reason for long faces, or that, as an unscientific contemporary suggests, the modern jaw is dropping in sheer astonishment at modern science.—*Living Age.*

* * * *

Psychic Messages from Oscar Wilde, edited by Hester Travers Smith, and published in London by Werner Laurie, is a curious but most interesting production. However unconvincing it may be, the book has one great difference and merit over other socalled spiritual revelations in that the ghost who talks in this one has real intelligence, and does not have to resort to cold chills down the spine, jingling tambourines, and skeleton hands to make himself known. What he says is not only intelligent but often extremely clever and interesting.

* * * *

Paul Souday, writing from Paris for the *New York Times Book Review,* contributes an entertaining article on *Novels That Are Not Entirely Sane.* Among these he mentions Henri Béraud's *Lazare,* a study of double personality; the alienist, Pierre Dominique's *Notre Dame de la Sagesse,* recounting the adventures of a madman; and André Thérive's *Le Plus Grande Pêché.*

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Dr. Edwin G. Ramsdell, health officer, has just reported that the infant mortality rate of White Plains, N. Y., during 1923 was only 38 in 1,000 living births, which is believed to be the lowest ever attained by any city of the State. It is less by half than the infant death rate for the whole State in 1922.—*New York Medical Week.*

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The *Missouri Botanical Garden Bulletin* tells us that meal made from the acorns of the various kinds of white oaks is very nutritious and digestible. It was formerly one of the chief foods of the Indians of North America.

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A recent publication of Putnam's is *Eyeless Sight* by Jules Romain, a French physician and litterateur who has been investigating extra-retinal vision. His theory is, says the *New York Times,* that in the dim past man, like many of the inferior animals, was endowed with the ability of seeing through his skin, an ability that has been lost through disuse. He believes that there exist all over the body tiny "ocelles" or undeveloped eyes, and that these may be developed so that they will again be able to see. Experiments are being carried on in France, particularly among blinded victims of the war, and it is said that some remarkable results have been obtained, some of the subjects being able to distinguish colors and even figures without the use of their eyes.

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The *News Bulletin* of the Public Service Information Committee of Philadelphia tells us that electrical experts have been able to estimate that a brilliant flash of lightning is worth about a dollar.

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The great stone woman found not long ago in the most remote forests of Oregon near Crater Lake has been explained. She is the work of an amateur sculptor and physician, Dr. Earl R. Bush, of Cincinnati. Seven years ago he came with a party of engineers into the great forest, the spirit of which permeated him with its sense of mystery, silence and vastness, until he became possessed with a desire to express it in some way. He asked the blacksmith of the party to lend him his chisels and worked for days until the great figure was hewn from the solid rock. Soon afterward the party returned to civilization and the statue was left alone in the forest, where it remained apparently undiscovered until another party of engineers happened upon it a few months ago.

* * * *

In speaking of the emancipation of women in India in a recent address, Miss Jane Addams told of the many who were taking advantage of the free medical courses for women. She mentioned one maternity hospital at which the prospective mother was permitted to bring her entire family during her confinement. An apartment for the family was set aside and even the mother in law was included in the family circle.

Abstracts from Current Literature

NEUROPSYCHIATRY

Tantrums in Childhood and Related Emotional Reactions.—Edith R. Spaulding (*Archives of Pediatrics,* March, 1924) states that while tantrums are not to be encouraged as constructive outlets of energy in the development of a personality, they may be looked upon, when they occur, as valuable signals of the needs of the individual in the socialization of his egotism. They are closely related to the physical and mental conditions of later life that represent efforts to escape from disagreeable phases of reality. In this respect they may be considered precursors of mental disease and of abnormalities of character formation. Among the important underlying factors of tantrums may be found a thwarting of desire, a resistance to authority, chagrin at the failure of some compensating mechanism, feelings of inferiority and inadequacy either real or imagined, and flight from unpleasant situations. The treatment of tantrums should be based on a study of the individual child. He should be helped to express his energy in an adult rather than in childish ways and to make assets of what have hitherto appeared as liabilities. He must be shown that the way to power and to normal health lies through the difficulty rather than around it. The recognition of the importance of such emotional explosions in childhood and their subsequent treatment should be of material help in the prevention of mental and nervous conditions later in life.

Factors Favoring Epileptic Seizures.—P. Hartenberg (*Presse médicale,* April 30, 1924) states that certain favoring factors play a much more important rôle in the pathogenesis of epilepsy than is generally thought; often no seizures would occur without their participation. The most obvious contributory factor is sleep, seizures often occurring either shortly after falling asleep or in the period between 3 and 5 a. m. Some cases, again, have seizures only after awakening; the seizures occur at whatever time they awaken and even if they stay in bed after the awakening. Some women have seizures only near the time of the menses. Often in girls the seizures begin at puberty. The menopause may induce initial seizures or cause them to return after prolonged recovery. Pregnancy improves one half the cases but makes one fourth of them worse. Coitus and masturbation have been reported to be factors. Ingestion of food is a well known exciting factor, seizures coming on either soon after the beginning of a meal or later. In some subjects, distention of the stomach by a large meal or by too much fluid—especially carbonated fluids—exerts a definite harmful influence. The same is true of rapid eating and insufficient mastication. Among the special foods the author has found apt to bring on seizures are fat broth, eggs, sugar, pastry, and cooked fats; the seizures diminish when these articles are withdrawn. Indigestible foods, such as cabbage and cucumber, and fermentable articles, such as starches and legumins, also promote seizures. Placing a series of patients alternately on a meat diet and a stringent low nitrogen diet, the author found, contrary to a prevalent belief, that the latter diet caused no improvement, but at times even aggravation. Blood examinations led to the conclusion that the food proteins generally are not a factor in the pathogenesis of epilepsy. Other factors referred to are active congestion of the head, as by staying in a warm, confined atmosphere; passive congestion of the head, as upon exertion or stooping; cerebral anemia, as by compression of the carotids or rising from bed for the first time after typhoid fever; emotions; vagotonia; exposure to cold; a hot bath; cold showers; fatigue; insufficient sleep; insufficient food; rapid growth in adolescents; varying seasonal influences; barometric changes; digestive disorders, especially putrefactive conditions and rapid evacuation, but also sometimes gastric insufficiency and parasites; intermittent diarrhea, the seizures returning when the diarrhea sets in; toxic foods and beverages; various drugs, such as opium, ether, cocaine, ergotin, nicotine, quinine, calcium, amyl nitrite, nitroglycerin, atropine, pilocarpine, eserine, purgatives and laxatives; enemas, endocrine disturbances; fevers (either beneficial or harmful); diseases such as diabetes, obesity and anemia; chronic suppurations in the nasopharynx or the reproductive organs in women, and high or low pressure of the cerebrospinal fluid. These various factors have no specific pathogenetic significance, but are well worthy of thorough investigation in the different cases. In one young woman in whom attacks were brought on by heavy meals with carbonated waters, a reduced diet removed the seizures, though bromides had failed. In a case in which series of seizures were always preceded for two or three days by diarrhea, a suitable diet likewise proved completely effective. In another case, cessation of masturbation was followed by cessation of seizures. In one patient the disorder was checked by correction of chronic enteritis, insufficient sleep and repeated special emotions. In another instance the same result followed treatment of five factors, viz., ovarian insufficiency, dilatation of the stomach, constipation, congestion of the head and obesity. Such a suppression of the favoring factors is especially effective in the early stages of the disease. The initial attacks often appear in a quite accidental manner, being distinctly the result of such factors. Later the epileptic habit becomes established and such satisfactory effects are much harder to obtain.

Weakness in Ulnar and Median Nerve Lesions.—L. J. Pollock (*Surgery, Gynecology and Obstetrics,* March, 1924), comments as follows upon his series of illustrated cases:

ULNAR NERVE LESIONS.

Physiological interruption cannot be differentiated from anatomical section by the strength of movements of the phalanges of the fingers. In recovering and partial lesions, relatively greater strength in the phalanges is observed but may at times be an inaccurate guide to the severity of the lesion. Relatively greater strength in the first dorsal interosseus, or in the abductor of the little finger, is an accurate guide as to the incompleteness of a lesion. Of course, any movement of the flexor carpi ulnaris or adductor of the thumb which is not supplementary in character determines an incomplete lesion. Sensation was completely lost in all severe partial lesions. Where sensory regeneration had occurred, usually motor recovery could likewise be demonstrated.

MEDIAN NERVE LESIONS.

Physiological interruption cannot be differentiated from anatomical section by the strength of the movements of the phalanges of the fingers. Although in a considerable number of cases the movements of the index finger were stronger, this could not alone determine the character of the lesion. Return of function in the opponens pollicis would indicate a partial or recovering lesion but because of supplementary motility is very difficult to determine. The author calls attention to a supplementary movement producing abduction of the thumb at right angles to the palm which he had not before noted. When the metacarpophalangeal joint of the thumb is partially ankylosed, so that no flexion or extension in the plane of the palm is possible, contraction of the extensor longus pollicis and the extensor ossis metacarpi pollicis produces abduction of the thumb as above described.

Sensory regeneration or incomplete sensory loss in the area supplied by the median nerve is almost constant in complete lesions and in otherwise physiologically complete ones; i. e., sufficiency serve partial lesions to come to operation. In a large proportion of partial or recovering lesions sensory regeneration is present when motor phenomena give no indication of regeneration.

ULNAR AND MEDIAN LESIONS.

When observed sometime after injury it would appear that anatomical section of both ulnar and median nerves produces complete paralysis of all the phalanges of the fingers and thumb; and severe lesions, not anatomical sections, show some movement in some of the phalanges of all of the fingers. In incomplete lesions of either ulnar or median nerves, weak movements of the phalanges of the fingers, if interpreted alone, are insufficient guides as to whether one of these nerves is severed and as to which one may be severed. As in isolated lesions of the median nerve, so when combined with an ulnar nerve lesion it was seen that in partial or recovering lesions and in more

than half of the severe lesions, not anatomical sections, incomplete sensory loss in the median distribution was present. In complete lesions of the ulnar and incomplete of the median when sensory regeneration was demonstrable, motor regeneration was likewise present.

It is emphasized that recovering or incomplete lesions of the median nerve may almost regularly be determined by sensory examination, whereas in ulnar lesions this rule does not apply, contrary to the generally accepted statement that signs of sensory regeneration are first to appear.

SYMPOSIUM ON PAIN

(*Surgery, Gynecology and Obstetrics,* February, 1924)

The Surgical Significance of Pain.—W. D. Haggard regards pain as a defense mechanism against injury whose chief outpost is the cerebrospinal system, a later addition to the nervous system. The vegetative nervous system which has to do with the primitive processes presides over these essential functions and at times conveys pain in an exaggerated way during the normal events of digestion and elimination. If harmful afferent stimuli pass to the cord over a long period of time, the threshold of response of the nerve cells which receive these stimuli is necessarily lowered and they respond to a stimulus which is much below that which they would ordinarily withstand. Hyperirritability of these cells permits a lesser stimulus than normal to produce a heightened response.

While diagnosis by pain is now remarkably well developed, especially in regard to abdominal pain, he points out that though pain is a striking symptom requiring interpretation, it is the collateral symptoms that clinch the diagnosis. He discusses briefly the pain of gallstones, and of acute perforation of the stomach, abdominal pain in children with beginning pneumonia and its similarity to appendicitis, etc., and then considers the subject of pain from the neurological viewpoint, stating that only by knowledge of the nervous distribution can one correctly interpret the occult origin of pain, for it is the relative significance of pain that must be taken into account. He says: "We have learned to be so suspicious of the pain complained of by the neurotic that occasionally their cry of 'wolf' is unheeded. Their pain may depend upon an abnormal personality rather than an organic abnormality. They need a physician who can 'raze out the written trouble of the soul.'"

Pain with Surgical Lesions of the Eye.—J. M. Patton discusses glaucoma, pain of the blind eye, iritis, corneal infections, etc., summarizing his findings as follows:

Let us remember that a severe neuralgic headache with or without nausea should suggest the possibility of acute glaucoma; that the pain of iritis is worse in the second half of the night; that sudden pain in one eye during the course of a general septic process may mean a destructive panophthalmitis; that pain in or about an old blind eye is an intraocular sarcoma unless proved otherwise; and that even though the pains indicating the lesser lesions mentioned may not indicate such grave conditions, they are worthy of recognition by the general surgeon and his prompt intelligent advice will entitle him to the heartfelt gratitude of his patient.

Intracranial Pain.—J. F. Barnhill describes pain, particularly intracranial pain, as follows:

Pain anywhere probably is always caused by absorption of toxic products by sensory nerves, or by their traumatism. This pain may be due to pressure, to infection, or to pressure plus infection. Environment has much to do with the ease with which pressure pain is produced. In regions where loose tissues prevail, as in the neck, the pressure of a growing tumor, or of an exudate, pushes the sensitive nerves aside, and pain is delayed. Inside the cranium conditions are different. No structure within the skull may be pushed aside without causing definite traumatism and positive pain. The dura mater, because of its position next the skull, is the part most easily traumatized by intracranial pressure. It is also the only intracranial tissue that is to any degree endowed with sensation. The pia mater has but few sensory nerves, while the arachnoid is wholly insensitive. In the dura mater, therefore, all intracranial pain originates. The actual cause of the pain often lies in the deeper structures of the brain, but the influence of that cause must in some way reach the dura mater before pain may be produced. Intracanial pain, it would seem, is always in the end an affection of the dura mater. The dura is the sensory organ of the brain.

He goes on to say that the physiological status of the brain is disturbed chiefly by the entrance from without of infection or the products of infection. The healthy brain is menaced by the invasion of infection from two sources, namely, through the blood stream, and by direct entrance through the skull itself.

Intracranial pain, therefore, is due usually to a definite assignable cause, and may often be traced to some external, clearly understandable source. The paranasal sinuses and the mastoid cellular labyrinth are the commonest foci of origin. Or, the intercommunicating blood stream may carry the infection from the septic cell to the sterile brain. The result is the same in either case. Inflammation is set up, inflammatory products are formed, intracranial pressure is increased, the sensitive dura mater is crushed against the skull, and intolerable pain is produced.

In tic douloureux he states that the external pain is but a reflex. Both the disease and its terrifying pain are in reality inside the skull.

A second type of intracranial pain is due to the circulation in the brain of toxic substance within the blood. To this type belong the headaches of indigestion, of constipation, migraine, the headaches heralding meningitis, typhoid fever, measles, etc., also Bright's disease and glycosuria.

In tumors the severity of the pain may be out of proportion to the size of the tumor. Its location may have much to do with the amount of suffering.

He concludes: Intracranial pain is undoubtedly less frequent today than formerly. It has to no inconsiderable extent been prevented or conquered by modern medical and surgical science. The internist and laboratory expert, working together, have discovered the cause and nature of blood stream infections acting on the brain to cause pain, and have in several pain producing diseases, notably in syphilis and diabetes, robbed these diseases of their most terrorizing symptoms. Surgery also has added greatly to the relief of intracranial pain when due to tumor growths or fluid collections.

Pain in the Ear.—F. M. Sulzman stresses the importance of knowing whether the pain is due to a lesion about the ear or is a reflex pain due to a lesion in some other part of the body causing this phenomenon. Nearly all pain about the ear proper is from pressure. Diagnose early and locate the cause of pain in the ear; relieve the pressure, institute adequate drainage, and in the majority of acute ear cases, in which pain is complained of, recovery is prompt.

Several factors enter into the degree of pain experienced. First, the patient, who may be one of two types, the oversensitive or the hyposensitive, which latter do not come for treatment until their ailment is in the late stages. Second, the type of infection; in cases with marked destruction of tissue from a streptococcus capsulatus infection the pain may be mild or altogether absent; the same holds true with many of the tuberculous type. Third, the character of the bone dealt with. The pneumatic and ebony type will each have special symptoms. In the soft pneumatic bone pain on pressure will be great, but the patient will complain very little, as pus has found an easy passage toward the cortex. In the ebony type the patient complains of much pain and pressure will not reveal it even until later in the course of the disease.

A case presenting headache and vomiting with a history of previous ear discharge with or without pain directly in the ear, should warn of a likely intracranial complication, meningitis especially. Pain is one of the early symptoms of brain abscess and it should be remembered that the site of pain is no guide to the location of the abscess, occipital pain being present in many cases of temporosphenoidal abscess, while frontal pain is found in cerebellar involvement. Aphasia, if present, would aid in locating the abscess in the left side. In all these infections associated with deafness, vertigo, nausea, and nystagmus, examine the labyrinth for the source of the trouble.

Pain in the Joints and Back.—R. D. Kennedy describes the pain of the various diseases of the joints and back, dividing these diseases into several groups, namely, those due to injury; those due to arthritis; those due to traumatic neurosis; those due to new growths; those due to uterine, pelvic, or abdominal disorders; those due to postural or mechanical strain; and those due to a myositis of the muscles of the back.

He recommends the x ray as the only possible means of diagnosing minor fractures. In cases of sprains where

compensation is involved he points out the difficulty of treatment owing to the delayed settlement, and locates the pain due to adhesions in the region of the seventh cervical or dorsolumbar junction, and over the fifth lumbar vertebra and sacrum. In cases of altitudinal strain the x ray shows no displacement.

Pain and Gynecological Affections.—R. R. Smith emphasizes the fact that gynecological affections seldom give rise to backache. When they do, the pain is more likely to be in the sacrum than in the lumbar region. The cause of the common lumbar backache of women is to be sought in fatigue, in faulty posture, and occasionally in arthritis, and not in the pelvis. Headaches of all description and pain in remote parts of the body are not caused by gynecological affections. Such remote pains and backaches are frequently associated with pelvic difficulties, but not caused by them, and it is imprudent to promise their relief by surgical or other gynecological measures. The old time socalled reflex pains are a matter of historical interest only.

He discusses the pain symptoms of the various gynecological diseases and, lastly, takes up the question of neurotic pain with respect to the sex organs as follows:

"Often, we find pain, when so far as we are able to determine, the organs are normal or present lesions that should not be painful. The pain, so far as the location goes, simulates very closely that attending real lesions of painful nature. There is nothing that requires greater diagnostic skill on the part of the gynecologist than the accurate estimating of the physical condition of the pelvic organs and the part that the nervous system is taking in the symptomatology.

"The term neurosis is almost as general as the term disease, so varied are its manifestations. We must bear in mind first that we are dealing with sensitive functionating organs and not inert ones. Our conception of what constitutes a neurosis may vary greatly; gynecologists are not neurologists nor are most of them profound in their knowledge of neurological literature, but in a general way it may be said that two principal factors enter into the production of pain in the nervous neurotic woman. The first is an oversensitiveness of the patient, so that organs ordinarily functionating painlessly now do so painfully. The second factor lies in the mind of the individual, whose faulty conceptions as to the integrity of her sex organs and the attending anxiety in regard to them exaggerate normal sensations into those of pain or discomfort. There are almost always other manifestations of the neurotic condition. We are dealing then with a functional disturbance of the nervous system, of which pain in the pelvic region is but a symptom. The success of the gynecologist in his particular field of endeavor will depend largely upon a rational understanding of such situations and his determination to refrain from instituting surgical measures."

Pain and the Genitourinary Tract.—A. J. Crowell describes in particular the pains of kidney diseases. Of kidney pain in general he holds that it is due to some stimulation of the sensory nerve supply of the kidney. Severe kidney pain is the result of some acute process and is divided into the inflammatory and noninflammatory types. The inflammatory type is constant, aching in character, increased by palpation and percussion while the non-inflammatory type is more sudden in onset, more severe and paroxysmal in character and disappears more suddenly than that due to inflammation. The patient lies on the opposite side to prevent pain in inflammatory conditions and on the affected side when pain is due to kinked ureter in nephorptosis, or any non-inflammatory condition causing sudden ureteral occulsion. Inflammatory kidney pain is increased more by deep breathing than by motion. That caused by kidney congestion is better in the morning and worse in the evening. The latter is not eased by fixation and is sensitive to deep pressure.

Human Vegetative Functions.—W. J. Mayo (*Surgery, Gynecology and Obstetrics*, March, 1924), says: "The era of surgery based on gross pathology is passing. Investigations of a physiological nature are enabling the detection of pathological changes in tissues in the early transitional periods; this fact leads to the hope that many diseases can be recognized at such an early stage of deviation from the normal that they may be prevented from assuming serious aspects. Cathcart and Benedict estimate that only twenty-five per cent of the energy produced in the body can be expended by the tissues under the control of the will, seventy-five per cent being used by the vegetative functions of the body, of which we are unconscious. In order to obtain a general view of the subject I have reviewed briefly, as related to those functions of which we are conscious (twenty-five per cent), some facts and near facts which underlie the mechanism of coordination and control of the vegetative functions (seventy-five per cent)."

Prefacing a brief and stimulating treatise with these remarks the author elaborates upon the following headings in turn; nonstriated muscle; the eight neuromuscular nodes; the internal secretions; the autonomic nervous system; and the central nervous system and the vegetative functions. He concludes with the query: "Are not many, perhaps most, of these unstable nervous conditions, socalled neuroses, which are exploited by the cults and quackeries, the results of an attempt of the newer part of the nervous system to take control of previously established coordinating functions, unrighteous attempts at control of the sympathetic ganglions, the internal secretions, and the primitive nonstriated muscle by an unbalanced recent development of the forebrain?"

Early Mechanical Treatment of Acute Anterior Poliomyelitis.—Harry Platt (*British Medical Journal*, February 16, 1924), advances the following fundamental surgical principles: 1. Complete rest through the use of a molded plaster of Paris bed or a well padded spinal frame of the double Thomas or Bradford type, with the addition of suitable splints for the limbs; 2. the prevention of deformity by the adoption, from the moment immobilization is affected, of certain standardized positions of the limbs—positions which are known to be antagonistic to the occurrence of the common contractures. The correct position for the lower limb is extension of the hips and knees, with the feet maintained at right angles to prevent the classical triple deformity of flexed hip, flexed knee and foot drop. For the upper limbs the positions are: right angle abduction of the shoulder, flexion at the elbow with supination of the forearm, and, where necessary, dorsiflexion of the wrist. 3. Relaxation of the paralyzed muscles is necessary. When the stage of recovery sets in and the paralysis becomes much more localized, the principle of physiological relaxation may be applied with a greater degree of accuracy. Once the patient is comfortably installed in his shell or frame, he should be subjected to the minimum amount of disturbance during the following weeks. In the average case the child will be brought into the sitting posture by degrees some time after the fourth to the sixth week. Surgical treatment should not be begun until the diagnosis is completed.

Pneumoventricle of the Cerebrum.—F. R. Teachenor (*Annals of Surgery*, November, 1923), reports on an unusual case which he compares with other classical cases from the viewpoint of the course of the air route, and of which he says:

The author wishes to offer a probable route more applicable to his case, which is the only reported case in which the fracture was through the external auditory meatus and the petrous portion of the temporal bone. As the cerebrospinal fluid escaped from the right ear it is assumed that the air gained entrance by the same route. Fractures in this region tend to cross the floor of the middle cranial fossa to the floor of the sella turcica. The floor of the third ventricle lies in this region. The floor of the third ventricle in the postchiasmal region and about the tuber cinereum is very thin, and the infundibular process of the third ventricle passes well into the pituitary stalk. A fracture in this region, with a sudden displacement of the brain placing these tissues under tension, might easily lacerate into the third ventricle, and permit an egress of ventricular fluid and an ingress of air. The air would then readily pass through the foramina of Munro into the lateral ventricles. This route has not been established, but is offered as a plausible and probable route.

As the presence of air in the cranial cavity or ventricle does not in itself cause any deleterious effects, the treatment should be directed against its most common complications: 1, Meningitis; 2, intracranial compression, and 3, its tendency in intracranial aerocele to the formation of cysts by replacement of the absorbed air with fluid.

Aseptic and antiseptic treatment of the wound of entrance of the air is of prime importance. Air in the ventricles is rapidly absorbed, and in the absence of other

indication for operative measures, notably increase of intracranial pressure, may be ignored. In the cases of intracrinial aerocele the air seems to be absorbed more slowly, and on account of its tendency toward cyst formation, should be aspirated or drained. Drainage would also tend to lessen the danger of meningitis. The drainage or aspiration, if done, should be done early. The accompanying skull fracture and brain injury will usually indicate the type of treatment to be employed. Pneumoventricle of the cerebrum probably occurs more frequently than the literature indicates.

Specific and Nonspecific Treatment of General Paralysis.—Franck (*Schweizerische medizinische Wochenschrift,* February 14, 1924) confirms the theory of Wagner that a hematoencephalic barrier, which prevents the passage of drugs from the blood into the brain, is weakened by acute infectious diseases, but that it is made more impermeable by arsenical, alcoholic, or morphine intoxication. The species of spirochete invading the central nervous system also favors an increased resistance against the therapeutic agents. After nonspecific treatment that induces fever the attack on the spirochetes is facilitated.

Anesthesia of the Splanchnic Nerve.—H. Fischer (*Annals of Surgery,* March, 1924) states that the vagi have nothing to do with the sensibility of the abdominal organs. The anesthetization of the abdominal organs can therefore only be accomplished by blocking of the splanchnics and the lumbar sympathetic trunk. He recommends Kappis's technic of anesthesia of the splanchnic nerve. He reports on various cases in which he has used this method, and comments as follows: It is undoubtedly a satisfactory method of anesthesia in severe surgical conditions of the upper abdomen where we feel that a general anesthesia would be better avoided. Personally I have not observed any ill effects from this mode of local anesthesia and do not hesitate to recommend it in suitable cases. The technic is not any more difficult than that of a spinal anesthesia.

Treatment of Infantile Paralysis.—A. T. Legg (*Journal of Bone and Joint Surgery,* January, 1924) emphasizes in his conclusion the following points: The evil results of overfatigue, general exercise treatment without regard for muscle balance, weight bearing without mechanical support in positions which favor deformity, tendon transplants without regard for the bony mechanics of a foot, are not matters of theory, but are facts which have been proved by the personal examination of twenty-four hundred cases, not only once, but many times.

Late Ulnar Nerve Palsy.—E. M. Miller (*Surgery, Gynecology and Obstetrics,* January, 1924) concludes from his study that fractures of the external condyle of the humerus, which occur most often in childhood, should be operated on if the loose fragment cannot be accurately reduced by manipulation, because the growth disturbance following nonunion is likely to result in a marked valgus deformity which may in later years produce a paralysis of the ulnar nerve. If this occurs, it is the duty of the surgeon to relieve the tension on the ulnar nerve as soon as the first signs of paralysis appear, either by a correction of the deformity, as recommended by Mouchet, or by transplantation of the nerve to the flexor surface of the elbow.

Compensation Neurosis.—George E. Price (*Northwest Medicine,* April, 1924) discusses a number of cases and arrives at the following conclusions:

Compensation neurosis is a definite and frequent clinical entity which may develop shortly after the initial accident, injury, wound or war experience, or may be delayed for a considerable time.

The neurosis may occur in association with an actual physical injury or may appear as an independent condition.

Three distinct factors contribute to the etiology of a compensation neurosis: first, the underlying neuropathic predisposition; second, the intermediate or pivotal element —the accident, injury, wound, or war; third, suggestion as to compensatory possibilities.

It is more difficult to tell where hysteria ends and malingering begins than to differentiate between hysteria and an organic disability.

In an accident case, prompt settlement of the claim by the party liable constitutes the best treatment (preventive).

When an individual afflicted with compensation neurosis is receiving a pension because of such disability, the continuation of the pension is bad for both the individual and for society.

Brain Abscess with Pathological Observations.—C. Bagley (*Surgery, Gynecology and Obstetrics,* January 1924) finds from his study of twenty brain abscesses that there are four avenues of infection, namely:

Group I. Presence of an extradural extension of the primary focus, with protrusion of the distended dura into the cranial cavity, direct extension from the extradural abscess, or invasion from the extradural abscess along the bloodvessels.

Group II. Secondary invasion of the brain along the bloodvessels without extradural link.

Group III. Penetrating brain injury with infection by foreign body, deep, with or without stalk: Path infected and open, hence long abscess stalk; path healed, hence no abscess stalk.

Group IV. Abscess superficial and open, secondary to direct laceration and infection of brain tissue.

As regards the behavior of the brain with regard to the formation of the abscess wall after the introduction of infection, he concludes that the clinical course of a brain abscess varies according to the infecting organism, the channel through which this organism reaches the brain, and the location of the infection in the brain substance as regards mesoblastic and epiblastic tissue.

This pathological study has been made as a basis for further consideration of the clinical data concerning these abscess cases.

Treatment of Congenital Cerebral Herniæ.—F. M. Lampert (*Surgery Gynecology and Obstetrics,* February, 1924), presents the following conclusions to his study:

1. Encephalocele is a dystrophy of the medullary tube occurring early in embryonic life. It is associated with protrusion of the meninges, brought on by disturbances of lymph and blood circulation and the consequent increased intracranial pressure.

2. Meningocele does not exist as a special morbid condition.

3. The cause of the dystrophies of the medullary tube lies in numerous embryological factors, such as processus neuroporicus, neuroporus anterior and posterior, occipital curvature, canalis craniopharyngeus and others, in association with traumatic influences during intrauterine life.

4. Conservative treatment of encephalocele does not give favorable results.

5. If operation is indicated it should be performed within the first months of life.

6. It consists in radical excision of the tumor and the use of an autoplastic flap (subcutaneous and periosteal) as well as in creation of conditions favorable for sufficient and continuous absorption of the excess of the cerebrospinal fluid and regulation of the intracranial pressure.

Use of Hypertonic Saline Solutions in Increased Intracranial Tension.—Henry Cohen (*British Medical Journal,* March 6, 1924), found that intravenous injections of twenty c.c. of a thirty per cent sodium chloride solution resulted in a preliminary burning sensation in the head and almost complete cessation of headache in cases of inoperable cerebral tumor. The relief from the headache continued for periods varying from ten hours to two days and usually an intravenous injection given every third day kept the patient free from headache. The hypertonic saline solution produces some local pain in the tissues and therefore the needle of the syringe should be washed with sterile water and a little of this should be drawn up into the syringe before making the injection. Inasmuch as thrombosis was observed at one time, the author tried giving six five grain tablets of sodium chloride coated with keratin three times a day. This gave some relief.

Results of Surgery for Migraine.—J. A. Buchanan (*Surgery, Gynecology, and Obstetrics,* May, 1924) presents two case histories with the following comment: The histories of the two patients presented illustrate exactly the end results of surgery for migraine. The minor assaults to destroy foci of infection in teeth, tonsils, gallbladder, appendix, and so forth, are all valueless. A new chapter in medicine may be written by surgeons not operating on patients for the relief of migraine. Persons with migraine are not, so far as knowledge is available, exempt from any disease occurring in man. In summing up the author says that migraine is hereditary in man and is transmitted from generation to generation according to the laws of Mendel, and that surgical procedures have no place in its treatment.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, AUGUST 6, 1924

Medicolegal Notes.

ACTION FOR MALPRACTICE IN TREATING FRACTURED ULNA—INSUFFICENT EVIDENCE OF NEGLIGENCE.

In an action for malpractice in the treatment of a fracture of the ulna in the plaintiff's right forearm at about the juncture of the middle and upper third, it appeared that for six weeks after plaintiff left the hospital he suffered no unusual pain. The defendant then removed the cast, manipulating the arm a little and bent the elbow, and told plaintiff he thought the union would get hard enough to enable him to go to work in about four weeks. Three days later the arm gave him some trouble and he went to another doctor, Dr. Ryan, who, after reducing the swelling and tenderness, sent him to the hospital for the purpose of removing the Lane plate which defendant had applied to the ends of the bone with two screws. The plate was found to be loose and the bones were dislocated, or they had slipped, permitting the bones to override slightly. The plate was removed, the bones placed in apposition, holes drilled in the end of each fragment, and they were tied together with kangaroo tendon. Dr. Ryan, who was the plaintiff's only medical witness, testified that with the plate in the face of the infection the arm would not heal, and he therefore removed the plate. Plaintiff remained under Dr. Ryan's treatment for six months.

The Iowa Supreme Court, Thorpe v. Talbott, 196 N. W. 716, affirming judgment for the defendant, held that under the undisputed evidence negligence was not shown. Dr. Ryan, a physician and surgeon of experience, did not criticize anything defendant did except to express a general opinion that in the ordinary general run of fractures at this location of the forearm, two screws would not be sufficient to hold the plate in position. But on cross examination the witness testified that the number of screws that should be in the Lane plate is largely a matter of judgment upon the part of the physician who has the wound open before him and observes the character of the fracture, whether it is an oblique fracture or a transverse fracture, or whether it is a fracture that is so broken that the ends dovetail together.

Dr. Ryan also testified that he found an infection and drained the pus; that he could not determine what caused the infection. If the plate became loosened it would irritate and aggravate the condition. He testified that the aftertreatment of a fracture of this kind was rather a difficult question to answer, but said that in a general way the aftertreatment of fracture of the ulna, as well as all fractures, is to observe and examine them frequently, and ascertain, as far as possible, the condition of the fractured bone and limb, and make every effort possible to maintain the reduction as it was reduced, which, however, in some instances cannot be done. The aftertreatment would really consist in watching the dressing and the splints, and seeing that they were giving proper support, and readjusting them, etc., if it became necessary. This evidence practically covered the case, and the witness said that he could not say there was any unskilful treatment. The result is not in itself evidence of negligence, nor does the mere failure to care raise a presumption of negligence.

CHARITABLE HOSPITAL HELD LIABLE TO PAY PATIENT FOR NEGLIGENCE OF SERVANT IN OKLAHOMA.

The Oklahoma Supreme Court, in City of Shawnee, v. Rousch, 233 Pac. 354, approving the doctrine laid down by the Alabama Supreme Court in Tucker v. Mobile Infirmary Association, 191 Ala. 572, holds that a paying patient in a hospital conducted by a municipality may recover damages for injury done her through the negligence of attending nurses administering to her during an operation, "leaving the creation of exemptions of this sort to the legislative department of government, if it deems them expedient." The negligence charged in this case was the administration of an enema of which the solution used was so hot as to burn the patient.

WHETHER FRACTURE IMPACTED HELD FOR JURY ON CONFLICTING EVIDENCES.

In an action for malpractice in failing to use the x ray and fluoroscope in the treatment of an unimpacted fracture of the left femur, because of which a shortening of the plaintiff's leg was not discovered in time to avoid a second operation, there was undisputed evidence that an unimpacted fracture requires these aids to determine whether a shortage is taking place, but the evidence conflicted as to whether the fracture was impacted or unimpacted. The Washington Supreme Court held, Howatt v. Cartwright, 222 Pac. 496, that it was for the jury to decide whether the fracture was impacted or unimpacted.

CROSS EXAMINATION OF MEDICAL EXPERT AS TO EXPERIENCE.

The Circuit Court of Appeals, Third Circuit, holds, Jacoby v. Kelly, 296 Fed. 590, that where, in a personal injury case, a medical expert called by the defendant was examined concerning an alleged injury to plaintiff's liver and on cross examination he voluntarily introduced the subject of the kidney, it was not prejudicial to defendant to cross examine him upon his experience in injuries to the kidney, and the cross examination was relevant upon the question of the qualifications of the witness as an expert.

PHYSICIAN TESTIFYING FROM EXPERIENCE CANNOT BE IMPEACHED BY MEDICAL WORKS NOT RELIED ON BY HIM—NEW JERSEY LAW.

It is the rule in the New Jersey courts, that when a physician testifies from his own experience as an expert, he may not be impeached by medical works upon which he has not relied as authority for his testimony. It is only when a witness refers to them as an authority for his own opinions that they are receivable as evidence, and then only for the purpose of contradicting him. In a case originating in the Federal District Court for New Jersey, the Circuit Court of Appeals, Third Circuit, holds that in administering New Jersey law a federal court is governed by the New Jersey rules of evidence, unless there is a federal rule to the contrary. In this case, however, the federal rule is the same as the New Jersey rule.—Western Union Telegraph Co. v. Ammann, 296 Fed. 453.

APPOINTMENT OF DISINTERESTED EXPERT WITNESS BY COURT.

In an action for personal injuries, the Washington Supreme Court, Hansen v. Sandvik, 222 Pac. 205, holds that it was proper to deny defendant's application for the appointment of a physician to examine certain x ray plates of the injuries to plaintiff's skull, which had been taken by her personal physician, where the x ray plates were examined by a disinterested physician appointed by the court. The picture taken by plaintiff's personal physician was in the nature of a private communication between the physician and his patient which, until waived by being introduced in evidence by plaintiff, could not be used by the defendant.

It was also held proper to deny defendant's application for the physical examination of plaintiff by a physician of defendant's own selection, the court having, in its discretion, appointed a disinterested physician to make such examination.

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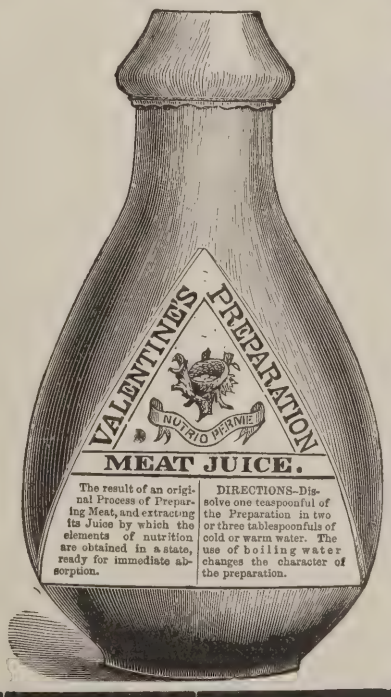
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Miscellany.

Clemenceau as Physician.—An editorial by Dr. Francis R. Packard in *Annals of Medical History* for December, 1919, outlines Georges Clemenceau's medical activities in this country. Soon after his graduation in medicine from the University of Paris in 1865, he sailed for the United States and settled in New York, where he opened an office and added to his meagre earnings by teaching French in a girls' school in Stamford, Conn. He was the seventh doctor in lineal succession in as many generations of Clemenceaus. The young physician had been imprisoned in France because he took part in a republican demonstration of students. Dr. Packard believes that his probable reason for coming to this country was to seek freedom from political oppression after his release from prison. His thesis, *De la Génération des Eléments Anatomiques,* was published during his residence in New York, and it is thought that he sent copies to some of the prominent members of the medical profession in the hope of gaining their interest and aid toward a career. "The thesis," writes Dr. Packard, "shows evidence of great industry and scientific research, but of course the progress of embryology has relegated the views propounded in it to the limbo of forgotten things." A copy in the library of the College of Physicians of Philadelphia bears on its flyleaf an inscription to Weir Mitchell from the author. Clemenceau was married to a student in the school in which he taught, Miss Plummer, of Sanbornton, N. H. They were divorced after twenty years of married life. When the French Empire fell, Clemenceau returned to his native land. Dr. Packard wonders, if this political event had not occurred, whether Clemenceau might not have remained in this country and built up a New York practice.

The Sensitiveness of Flowers.—In the persistent and unremitting search for scientific knowledge one is continually encountering discovered facts that test our credulity and would have been put aside as unworthy of a moment's consideration by our grandparents. Experiments made at the *Jardin d'Acclimatation de Paris* has demonstrated that flowers are almost as quick to show signs of displeasure as human beings. Most people know what it is to arrange two kinds of blossoms in a vase and then to find a few hours later that the blooms are drooping. In most cases this is due to the fact that flowers object to being associated with one another. Separate the blossoms and, in a short while, they will be as fresh as ever.

Lilies of the valley are hardly ever happy for long when mixed with other flowers and soon show their dislike by drooping badly. Roses, carnations, sweet peas, and mignonette are all flowers which should be kept to themselves. Either they will affect the blooms with which they are placed or they themselves will quickly fade.

Quite a number of flowers dislike music. Time and again it has been noticed that blossoms on a piano which is frequently played last only a very short while. Even more curious is the effect of a jazz band on some of the more sensitive flowers. The large Easter lilies and cyclamen have been noticed to turn away from a band which was playing dance music, just as if they wished to get as far off from the sound as possible.

There seems to be something about certain persons that violets really dislike, and not only will they withhold their perfume but they will droop as well. Much the same kind of thing has been observed in the more delicate sorts of roses.

Flowers, as well as foliage plants, often show a marked dislike of certain rooms in a house. A vase full of drooping blossoms removed to another apartment will undergo a complete transformation in an hour or so. There is usually no very clear reason why this should be so, except that, in the first instance, the flowers are not pleased with their surroundings. If a foliage plant seems to be unhappy in one room, place it in another, and it is quite likely to become healthy once again.

Alastrim.—Reference to a disease prevalent in the West Indies may not be devoid of interest, especially as cases have been imported into France, and an instructive communication has been made to the Paris Academy of Medicine, by Dr. Léon Bernard. This disease, which bears the name of alastrim, is an eruptive fever, and appears to have been imported from South Africa where it has been known since 1904 by the name of caffre fever. The onset is sudden, with a temperature of 39° to 40° C. (102° to 104° F.) and digestive disturbances. The fever lasts hardly forty-eight hours, then drops to normal, the gastrointestinal symptoms subside, and the exanthema appears. The latter symptom constitutes the entire symptomatology, there is no exanthema or adenitis.

The exanthema is general, appearing first on the face, scalp, and ears, then on the limbs, most marked on the hands and feet; the eruption is more discrete on the trunk. It may present several successive outbursts, as in varicella. The elements of the eruption are from the onset opalescent vesicopustules of variable dimensions. In the coherent types they are small, but in ordinary cases they are the size of a pea, and are distinct from each other. Some are umbilicated, others not. Pruritus is sometimes present. At the end of ten or eleven days the eruption fades, while sixteen days later it is seen merely as small whitish spots, contrasting by its depigmentation from the surrounding integument. The surface of the spots is often furfuraceous with distinct contours. On the palms—whose skin is white—each element is marked by a pinkish finely epidermized macule surrounded by an elevated epidermic border with a small central spot. Some of the maculæ are confluent, in which case a large surface of epidermis is raised, recalling the desquamation of scarlet fever. The cutaneous lesions require about three months to disappear.

Generally speaking, the disease appears to be mild, although Moody observed thirty deaths out of a total of three thousand cases. Dr. Bernard, who studied cases of alastrim in French ports, states that it is quite distinct from both variola and varicella, although some observers consider the disease as an attentuated form of variola, similar to the varioloid occasionally developing in vaccinated subjects. In this respect, the disease is being studied.

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United States Leads in Chemical Research.—Figures compiled for the *Journal of Industrial and Engineering Chemistry*, by Professor E. J. Crane, of Ohio State University, show that leadership in chemical research, captured from Germany during the world war is still held by scientists in this country. Germany, France, and Belgium have come back strong; but have not yet regained their prewar productivity. Austria and Russia have been slower in recovering from the setback. British chemists have maintained a steady productivity and made a slight gain, while Japan is becoming an increasingly important country in chemical investigation. Czechoslovakia, Poland, Roumania, and China, have recently taken a place among the producers of chemical research. Professor Crane's figures are based on the number of articles appearing in chemical journals of the various countries. In 1913 the German journals published 6512 chemical articles and the American 3940. In 1923 the relation was reversed; the American journals publishing 6014 and the German 5064.

Health of the Swedish Nation.—The complete investigation of personal health records extending back through several generations and covering a whole nation has been undertaken by the Swedish Institute of Racial Biology, which has just turned in the report of the second year of its work.

Under Professor H. Lundberg, who organized the institute, anthropological statistics have now been gathered concerning 83,427 persons. Stature, head measurements, colors of eyes and hair, diseases, especially hereditary diseases, causes of death, etc., are among the things observed by the investigators. In the northern provinces of Sweden, where Lapps, Finns, and Swedes have intermarried, the death rate is relatively high. Special genealogical studies have, therefore, been undertaken in this region in order to ascertain, if possible, what effect race mixture has on longevity. In three villages, for example, genealogical histories have been drawn up for the entire population covering a period of 125 years. In another community the histories of 1,200 families have been traced during the period 1781-1851. Another subject that at present occupies the attention of Professor Lundberg and his assistants is the ancestral history of twins and triplets.

Research into the histories of families is greatly facilitated by the unusually accurate parish registers which have been kept and preserved for hundreds of years, and also by the fact that the entire history of any given family is usually confined to Sweden. There has been almost no increase of the population through immigration, and the Swedes are said to have preserved greater racial purity than any other Teutonic people. Incidentally, it is shown by archeology that the history of the present inhabitants of Sweden goes back 5,000 years in the same place.

The accumulation of data regarding hereditary disease, the development of criminal instincts, and other traits is only a part of the program of the Swedish Institute of Racial Biology. It is also conducting research work into the elimination of racial taints through eugenic measures. Research is also being directed into the field of eugenics and the development of individual talent and genius.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE MASTERY OF FEAR. By William S. Walsh, M.D. New York: E. P. Dutton and Company, 1924. Pp. 315.

AFFECTIONS DE L'OEIL. En Médecine Générale. Diagnostic et Traitement. Par F. Terrien et G. Cousin. Paris: Masson et Cie, 1924. Pp. 510.

COLONIC THERAPY IN THE TREATMENT OF DISEASE. By O. Boto Schellberg. New York: American Institute of Medicine, Inc., 1923. Pp. 202.

ÉTUDES MÉDICO-RADIO-CHIRURGICALES SUR LE DUODÉNUM. Par Pierre Duval, Jean-Charles Roux, Henri Béclère. Paris: Masson et Cie, 1924. Pp. 269.

ALLIANCES FOR THE MIND. By Gertrude Besse King. With Introduction by Walter Lippmann. New York: Harcourt, Brace and Company, 1924. Pp. 153.

LE TRAITEMENT DE LA SYPHILIS PAR LE BISMUTH. "Les Actualites Therapeutiques" Collection. Par le Dr. Georges Drouet. Paris: A. Maloine et Fils, 1924. Pp. 63.

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Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 4 NEW YORK, WEDNESDAY, AUGUST 20, 1924 WHOLE NO. 2287

Chronic Diseases*

A Neglected Community and Institutional Problem

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In its provision for the sick and infirm the community has planned well for certain types of patients. Those who are acutely ill receive excellent care in the general hospital. Those suffering from the lesser infirmities of advancing years are well provided for in proper homes for the aged and infirm. Between these two extremes, however, there is a vast category of individuals of all ages, afflicted with a great variety of pathological conditions which may affect any organ of the body, and which constitute the socalled chronic diseases. The distinguishing feature of these diseases, as their name implies, is their long or even lifelong duration.

Many of these patients require months of treatment to achieve rehabilitation; others are left with a permanent nonprogressive disability; and in still others the downward course is slow but progressive, lasting many months or years. The protracted duration of the disability results in a continuous financial drain on the patient and his family, often ending in complete destitution. In these patients, therefore, the economic and medical factors are closely interwoven, far more so than in the case of the ordinary acute medical or surgical illness. Therefore, in planning for the institutional care of these individuals, a wide variety of questions must be considered. The scope of the problem is indicated by the many different types of institutions that at present meet some of the needs of chronic patients. Homes for incurables, almshouses, city infirmaries, homes for the aged, and hospitals for chronic diseases all minister to the same general class of individuals. But in no case has the problem been envisaged in its full extent, and in no instance has an institution endeavored to determine the relation of its particular small job to the question as a whole. The patient with a chronic ailment is a sick man for whom the proper type of institutional relief has not as yet been provided.

A recent survey of the leading institutions for chronic patients, most of which call themselves homes for incurables, reveals that they largely ignore the scientific study of disease, minimize the importance of medical treatment, are deficient in the provision of a skilled nursing staff, and do not attempt the economic rehabilitation of the patient. A large number of the type of patients under discussion are inmates of almshouses. An analysis of the 1910 census shows that of 84,198 paupers enumerated in almshouses, 53,619 were suffering from a serious physical or mental defect. There were 17,486 deaths. The high death rate is accounted for only in part by the advanced age of the inmates, for 7,803 deaths occurred in patients under sixty years of age, and 3,213 in those under forty. That conditions have not changed much in the last ten years is shown by the New York State figures for 1921, from which it appears that sixty-seven per cent. of the 8,732 inmates of almshouses were sick or infirm.

The object of this communication is to outline a plan for the proper institutional care of the chronic patient. A chronic disease may be defined as one that lasts for a period of from three months to several years. The disease may be checked, it may remain stationary after producing a certain amount of disability, or it may progress until the patient's death. All chronic diseases at the outset require active medical care, either for diagnosis or treatment. If the disease runs a progressive course, active medical care and skilled nursing may be needed until death. Even when the disease becomes stationary, active medical and nursing care may be necessary at any time, should a complication or an exacerbation of the illness occur. If the disease remains stationary or the improvement is sufficient, hospital care may no longer be required.

It will be well to particularize a bit in order to make the question at issue more concrete. All chronic patients may be grouped in three classes according to the demands they may make on the resources of an institution. Class A are those who need active hospital care for diagnosis and treatment; class B are those who need good nursing care only; class C are those who need custodial care only. The management of each of these groups is a problem in itself and each class places different demands on institutional resources.

*From Montefiore Hospital for Chronic Diseases.

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In seems wisest, therefore, to subdivide an institution that cares for chronic patients into two main subdivisions: the hospital division for the care of class A and class B cases, and the custodial division for the care of class C cases.

HOSPITAL DIVISION OF THE CHRONIC INSTITUTION

The proper care of group A patients demands a complete hospital organization with an attending staff, on which all of the specialties are represented—a resident staff, a good laboratory, x ray and operating room equipment, skilled nursing and dietetic management. Since physiotherapy is one of the best forms of therapy in chronic ailments, the importance of such a department cannot be overemphasized. It should be complete in every respect and should include a Zander gymnasium, divisions for hydrotherapy, electrotherapy, baking and massage. There should be a staff of trained physiotherapists with a trained physician in charge.

Since the treatment of most chronic diseases may last from several months to several years, it is wise to establish an occupation therapy department. The chief function of this department is to occupy the patient's mind by giving him something to do during his long stay in the hospital building. This department should be a branch of the rehabilitation department in the custodial pavilion. which will be discussed subsequently.

A few examples of chronic diseases which practically always place the patient in class A are diabetes, tuberculosis, cancer, severe anemias, advanced heart and kidney disease, recent hemiplegias, chronic polyarthritis, and certain skin diseases, such as pemphigus.

Group B cases do not require the constant supervision of a physician but they should command an excellent nursing service. Examples are patients who are bedridden as a result or brain or spinal cord disease. Bed sores must be prevented, occasional medication must be given, the patient must be fed, cleaned and kept comfortable. Adequate care can be given only by one well trained in the art of nursing.

CUSTODIAL DIVISION OF THE CHRONIC INSTITUTION

This section of the chronic disease hospital is best provided for by a separate building, specially designed. It should be connected with the hospital division by a covered passageway or tunnel, so as to afford convenience of transfer between the two sections. Since custodial cases require no hospital care, the expense of maintaining them should be considerably less than that of group A and group B cases. The custodial case needs merely a home where he may obtain his meals and lodging and perhaps some assistance with his personal needs, such as dressing, washing and feeding. Examples of such cases are old walking hemiplegics, patients with chronic arthritis, multiple sclerosis, advanced but compensated heart disease, tabetics, and patients who have had amputations of one or more limbs. These patients are institutionalized because their home conditions are so poor that their families cannot care for them. For instance, a wheel chair patient who lives in a tenement, will remain confined to his room for the rest of his life; there is no way of transporting him upstairs and down.

The establishment by the community of an adequate number of beds for custodial cases is of importance for the sake not alone of the patients but of their relatives as well. Such an individual frequently disrupts and pauperizes his family. A possible breadwinner is compelled to stay at home to minister to his wants and a constant series of extra expenditures are involved in his care. In addition to this the presence of a chronic invalid, who often is querulous and exacting in his demands, slowly but surely undermines the morale of the family and encourages the acceptance of economic defeat.

It is most important to recognize that patients do not remain in one class indefinitely. Many patients of the custodial class experience relapses or intercurrent affections, which place them in the same category as class A patients. Every class C patient who dies is a class A case during his terminal illness. Provision must therefore be made for their ready transfer to wards where they can properly be cared for. On the other hand, many patients who are on admission class A become in the course of months purely custodial cases. It is a wanton waste of funds to house such subjects in a costly hospital plant when their needs can be met much more inexpensively.

It is the failure to differentiate these different types of patients that is at the root of most of the evils connected with the present institutional care that is given to chronic patients. It is generally assumed that all of these sufferers require custodial care only, that medical treatment and all measures of rehabilitation are useless and, therefore, an unnecessary expense. This tacit assumption is shared by the private homes for incurables, by public almshouses, and by many city infirmaries alike. A survey of their patients, however, reveals quite a different story. It is obvious that unless all chronic patients are admitted into a properly equipped and organized institution, A and B cases cannot receive the medical and nursing care which they need. It is these cases that are so often neglected in the homes for incurables, almshouses and infirmaries. These institutions have little justification for an independent existence. They should function as the custodial pavilions of hospitals for chronic diseases.

The internal construction of both the hospital and custodial pavilions of the institution must be adapted to the needs of the patients; for example, many chronic patients propel themselves in wheel chairs, which means wide corridors and halls, wide doors to the rooms and wards. Side railings along the walls and in the bath rooms are indispensable to certain patients. Because chronic patients remain in the institution for months or perhaps several years, a reasonable amount of social life should be provided. Therefore, space should be set aside for a theatre, library, recreation rooms, barber shop, tailor shop, a cooperative stationery store, etc.

When the condition of a class A or B patient has improved to the extent that he no longer requires hospital care, efforts should be made to discharge him, providing his social condition warrants it. The patient who is burdened with no physical disability or with only a very slight one, can easily shift for himself even if he is homeless. The physically handicapped individual, however, should not be discharged, both for his own sake and that of his fam-

ily, unless they are well able to take care of him. All patients who cannot be discharged because of economic reasons should be retained in the custodial pavilion.

Once they have been admitted to the custodial pavilion, the attempt should be made to rehabilitate them from an occupational viewpoint. Every custodial patient who can should pursue some gainful form of work. Besides earning something toward his support, work will keep him in a happier state of mind; his health may further improve, or the stationary condition of his ailment may be prolonged.

The rehabilitation department should consist of an experienced director in charge and a staff of assistant teachers. After obtaining from the physician all medical information regarding the patient's ailment in relation to work, e. g., length of work period, outdoor or indoor work, manual or mental, etc., they should assign and teach the patient the proper occupation. Only useful occupations, by means of which a patient may partially or entirely support himself, should be selected. Examples of group C patients who can pursue gainful occupations in the custodial pavilion, are those who have had one or both lower limbs amputated or paralyzed, certain types of joint diseases, certain heart cases. These patients are unable to walk about the city streets or have no chance to compete for a position with the healthy man. The work must be obtained for them and brought to them. Certain chronic pations may learn some form of occupation in the rehabilitation department, which will, in the course of time, enable them to procure employment and leave the institution.

At Montefiore Hospital for Chronic Diseases where facilities for A, B and C cases are provided and where a cross section of the patient population is practically identical with that of homes for incurables, infirmaries and almshouses, we have made a study of the relative number of these different classes of patients. Such a study, if accurate, will give some basis for future planning for this type of institution. Such figures can never be absolute, for there will always be some difference of opinion as to the proper category in which to place the patient. In our experience physicians err most frequently by placing in the custodial class patients who really require more careful attention. Because of the fact that patients often change from one class to another, it was thought best to note the number of hospital days provided in each category. At the end of every month the resident physicians entered on a card which had been made out for each patient the number of days during the past month which that patient had been in each of the classes, or, if his status had not changed, in one particular class.

The results of a seven months' analysis are presented in the following table:

TOTAL NUMBER OF HOSPITAL DAYS, JUNE TO DECEMBER, FOR THE YEAR 1923

	Cancer		*Medical*		*Surgical and Orthopedic*		*Neurological*	
A	5,812	95.5%	10,201	47.8%	13,651	64.3%	15,143	30.3%
B	274	4.5%	4,401	20.6%	3,974	18.7%	19,270	38.6%
C	0	0%	6,735	31.6%	3,607	16.9%	15,479	31.0%
	6,086		21,337		21,232		49,892	

PERCENTAGE OF A, B AND C CASES

FOUR SERVICES		TUBERCULOSIS SERVICE		
A	45.5%	A	20,542	69.5%
B	28.3%	B	1,239	4.2%
C	26.2%	C	7,767	26.3%
			29,548	

The table shows that nearly fifty per cent. of the hospital care days belong to group A and that almost seventy-five per cent. of the hospital care days are in groups A and B. This is sufficient evidence for the need of proper hospital facilities in any institution that pretends to take care of chronic diseases. The percentage of class A patients is somewhat higher than would be found in the average institution that cares for patients with chronic diseases, for Montefiore Hospital endeavors to admit only such patients as will be benefited by medical care. On the other hand it must be recalled that there are very few institutions in existence which will admit class A patients. The general hospitals will not keep them, for the course of their illness is too long; the homes often will not take them for they require too much attention, or else are not sufficiently disabled. A striking case in point is patients with early arthritis deformans. If treated early the progress of the disease may be checked in many instances. This the general hospital refuses to do and the home cannot do. Consequently these patients drift from hospital to hospital, from dispensary to dispensary, becoming progressively worse, until they are sufficiently crippled to be suitable candidates for admission to a home for incurables. The same may be said for many other diseases. The state of affairs existing in most institutions accepting chronic diseases has already been alluded to. The doors of the general hospital are locked to the chronic patient, while the institutions that will admit him do not treat him as a patient.

There are many homes for those with incurable cancer, institutions which provide only elementary nursing care for their patients. Yet we find that ninety-five per cent. of our cancer patients belong to class A. It is true that not many of these unfortunates can be cured, but many can be relieved and, in not a few instances, their lives can be prolonged for a considerable period. Many physicians have seen individuals with cancer of the rectum or of the uterus, sick, emaciated, suffering and helpless, who, after appropriate radium or x ray treatment, have regained their strength and their spirits and have lived for several years in comparative comfort.

The problems which we have briefly outlined need study from every angle. The medical problems are inextricably bound up with economic ones. A young child with severe diabetes, who requires constant insulin and dietetic treatment, can be cared for at home, if the family is well to do, or even if the family is just selfsupporting, provided that the parents are intelligent. If they are ignorant, however, the child is doomed unless it is brought up in an institution. A case requiring nursing care only could be provided for at home in many instances, were it not for the fact that the home care of such an individual keeps a necessary wage earner from his work while he is caring for the invalid. A hemiplegic

patient, who is up and about, will never see the sunlight or enjoy a breath of fresh air if his family live on the third floor of a city tenement.

Measures should be taken to ascertain the number of beds for chronic patients that are needed per unit of population. These should be further subclassified in the different categories that have been discussed. The adaptation of the physical plan of the buildings to the several types of patients should be thought out. An analysis of the necessary medical services and equipment demanded by the different types of patient must be made. For instance, the great importance of physiotherapy will bear emphasis. The nursing, dietetic, social service, laboratory and occupation therapy services will have to be studied in relation to the needs of the different groups of patients.

The importance of a properly conducted hospital for chronic diseases in the education of physicians and nurses cannot be overestimated. These diseases form the bulk of the ailments to which humankind is heir, and they have not as yet received the intensive study which they merit. Similarly, the opportunities for the clinical and laboratory investigation of chronic diseases in such an institution are unlimited. At present most of this valuable material is going to waste, instead of being used in an endeavor so to increase our knowledge of disease that its end results—the chronic patient— may no longer be a community burden. The care and disposition of the chronic patient and the scientific study of chronic diseases are among the most important community and medical problems of the present generation.

Radium Therapy in Gynecology*

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(*Concluded from page* 107)

RADIUM IN UTERINE MYOMATA

More and more, radium is finding a legitimate place in the therapy of uterine myomata and, as aptly remarked by Beclere: "The treatment of uterine fibroids is quite legitimately passing from the hands of the surgeon to the medical radiologists and from year to year it will thus pass in increasing proportions."

We have been using radium in the treatment of uterine myomata since 1916. We have used discriminating care in the selection of our cases and thus far we have radiated seventy-seven patients. The results have been gratifying in nearly all.

In most instances a dose ranging from twelve hundred to twenty-four hundred mghrs. was used. In all but four patients a single dose was sufficient to control the bleeding and cause regression of the tumors. Four patients required more than one exposture. One patient with a tumor as large as a five months' gestation requred three applications. In another, three exposures were necessary before the bleeding ceased. In still another there was no abatement of bleeding after three exposures, and therefore a vaginal hysterectomy was performed. The fourth patient had what we regarded as a large myoma. Three twelve hundred mghr. doses were administered, but the symptom, bleeding, was not relieved and an abdominal hysterectomy was subsequently performed. The microscopic examination of the specimen removed from this patient revealed the myoma to be undergoing sarcomatous degeneration.

In one of the patients to whom we have already referred and upon whom a vaginal hysterectomy was done, the tumors were extremely small and even after microscopic analysis, the cause of the continued bleeding could not be determined.

With respect to diagnosis, it is well to direct attention to its importance as well as its difficulties. Radium should not be applied to a myoma unless the radiotherapist is certain of the true nature of the lesion. Sarcomatous degeneration occurs in approximately from one to two per cent. This alteration cannot be determined clinically and while myomata generally present a fairly characteristic clinical picture, mistakes, nevertheless, may occur. Recently we removed a large ovarian cystoma from a patient who had been radiated for a myoma by one of our prominent contemporaries. Quite recently I radiated a patient for menorrhagia ostensibly rising in a uterine myoma. The menorrhagia ceased, but a tumor, later recognized as a highly organized ovarian cystoma, was present in this patient's pelvis. This was removed subsequently through an abdominal incision and it proved to be a teratoma which originated in the right ovary.

Historically, it is of interest to note that the first application of radium within the uterine cavity in the treatment of uterine myomata, was administered by Dr. Robert Abbe in 1905.

The treatment of menorrhagia, due to myomata, by radium was started in the Mayo Clinic in 1915 and at the present time radiation is considered the treatment of choice in growths of moderate size, regardless of age, although between the ages of thirty and forty, or during the childbearing period, myomectomy is given first place, and radiation second place.

This course is pursued because the menstrual and reproductive functions are more likely to be conserved by operation than by radiation. This is confirmed in the report of five hundred and ten myomectomies performed in the Mayo Clinic from January, 1898, to 1918. This report shows that thirty, or 12.1 per cent., of the patients operated upon became pregnant subsequently.

On the other hand, it has been demonstrated that

*Presented at a regular meeting of The Bucks County Medical Society, February 13, 1924.

it is rather unusual for women to conceive and continue to term after radiation. According to Stacy, the literature records but few instances of conception going to maturity after the application of the element. This writer has observed but one instance of postradiation conception and this patient aborted a dead fetus at the end of the seventh month. Myomectomy, then, in the childbearing period seems preferable to radiation.

INFLUENCE UPON CONCEPTION AND PREGNANCY

H. B. Mathews refers to eight hundred and seventy-four patients of the childbearing age to whom radium was administered. Of this number only thirty-nine conceived. Twenty of these patients gave birth to normal babies at full term. In fifteen, labor occurred prematurely.

Werner records fifteen hundred cases of myomatous and myopathic bleeding in which seventeen of the patients became pregnant, several of them repeatedly. In all there were twenty-four cases of gestation; nine of these terminated in abortion, three of which were unquestionably induced. Fourteen pregnancies went to full term; one patient had a hysterectomy performed; six patients, even after several months of amenorrhea, conceived and in several patients oligomenorrhea only developed.

It is interesting to note the nature of the full term deliveries. Of the fourteen full term children born alive, four died, one immediately after birth and three at the age of one year of acute infection. The other children were sixteen per cent. below normal weight and eight per cent. below normal height. What significance this may have it is impossible to say, though it does seem to indicate that children thus born are subnormal physically.

It might be of interest to cite the cases of two patients who were treated during pregnancy. In one case four irradiations were given. The child born of this mother was of normal development. In the second case, four applications were made within the vagina and the child of this mother was born at full term, but it was far below normal.

Werner believes that irradiations may cause injury to the ovum or embryo, but that the injury may be of such nature as not to be a permanent handicap and that it may be overcome during the course of subsequent development.

Kupp has been employing intrauterine radium therapy since 1914 in the treatment of uterine fibroids. He reports four hundred and fifty-two patients who were irradiated, of whom three hundred and thirty-eight had myomas and one hundred and twenty-two some form of metropathy. In forty-three young women there was a marked diminution in the size of the tumor with the return of menstruation after one year. Six of these patients became pregnant, went to term and gave birth to healthy children.

RESULTS

Dr. Howard A. Kelly in a personal communication states that he always considers radium first in the treatment of myomata and operation second. Radium, he says, "is the best treatment in women forty years or over or when the menopause is not far distant." He is convinced that in nine cases out of ten, radium will do all that operation can do without the attendant risk of the latter. As a preliminary to the use of radium, Dr. Kelly emphasizes the importance of excluding all possibilities of malignancy and lateral disease. All doubtful cases should be given the benefit of surgery. In small tumors occurring in young women, Kelly prefers myomectomy because this does not check the menstrual process nor preclude the possibility of conception.

In 1919, Kelly reported two hundred and ten cases of uterine myomata treated by radiation. One hundred and forty-six of these patients were forty years of age or over and sixty-four were under forty. The average age was forty-three. The oldest patient was sixty-seven and the youngest twenty-six. Basing his conclusions on one hundred and eighty-two of the two hundred and ten cases, he found radiation sufficient to relieve the patients in all but eleven. In five of the eleven there were other complications. In two, operation was elected. In three, operation proved unnecessary and only one patient failed to respond to treatment.

From observation of more than one hundred cases and from the viewpoint of efficiency, safety and morbidity, Clark states: "that within certain limitations one may say with positive assurance, that radium must supplant operation in the treatment of uterine myomata."

Clark, like other radiotherapists, employs radium only when the menopausal years are not far distant, and then only if the tumor is uncomplicated by adnexal disease and if not "too large."

Clark and Keen in a further study of four hundred and seventy-six cases of bleeding due to myomata and metropathy, controlled the symptom in ninety-one per cent. of the cases. In this series one death occurred, which was attributed to postpartum hemorrhage. In twenty-three patients slight bleeding returned but not of sufficient gravity to call for further care. In twenty-eight patients subsequent treatment was necessary, but of the total number only three per cent. required surgery. Complications were confined to two cases of phlebitis and eight cases of more or less severe neuritis. Clark and Keen believe, as do most investigators, that prior to the age of thirty-five, radium may be used safely, though myomectomy is preferred for procreative reasons.

Miller treated one hundred and seven cases of fibroids with radium. Complete cessation of symptoms occurred in one hundred and two within five months after treatment. Two of the remaining five cases required a second application but obtained relief. Two were not relieved by a second exposure and one patient had a hysterectomy performed.

Polak treated one hundred and six cases of uterine fibroids. In one hundred and four patients the bleeding ceased and never recurred after the first subsequent period. In two patients a second application was made. Operation was necessary in two only.

DOSE

We have already indicated that in young women in whom permanent amenorrhea is to be avoided, the average dose should be small. Usually a dose of two hundred to three hundred mghrs. is quite sufficient. In older women five hundred to six hundred mghrs. or more, may be employed, but Kelly does not think that a dose of more than fifteen hundred

mghrs. is ever necessary. A large dose, however, does not do any harm and in elderly women it is unquestionably better to use a relatively large dose and bring about permanent amenorrhea by a single application. In these patients it is our custom to use one hundred mg. for twenty-four hours.

INFLUENCE OF RADIUM UPON MYOMATA

Without doubt, radium will cause a large majority of uterine fibroids to disappear partially or wholly and in almost every instance it will overcome the most frequent as well as the most vexatious symptom, hemorrhage. These phenomena are brought about in three ways: First, by the action of radium upon the ovaries, causing sclerosis of these organs with partial or complete cessation of function; second, by sclerosis and obliteration of the bloodvessels (endarteritis) supplying the neoplasms with nutrition; and third, by causing direct regression and atrophy of the neoplastic cells.

APPLICATION

In the treatment of uterine myomata the element is applied to the interior of the uterine cavity. It may be applied also, properly screened, over the abdomen. Intrauterine applications may be combined with x rays over the abdominal wall, although the application either with radium alone or with the x ray is seldom necessary (Fig. 3). One dose of the element is usually quite sufficient to cause regression in the tumor and control the symptoms. A second application may be necessary and this may be made after an interval of four weeks, if the symptoms do not abate.

INDICATIONS

The indications for radium in the treatment of uterine myomata may be summed up in the following:

1. In small growths occurring at any age—with certain reservations—if associated with bleeding.
2. In all types of myomata—except the submucous—if uncomplicated by infection of the uterus or its appendages.
3. In large obese women in whom operation is difficult and often associated with a definite morbidity and a definite mortality.
4. In patients who refuse operation.
5. In individuals suffering from constitutional disease.
6. In patients of poor surgical risk.
7. In tumors of moderate dimensions, not exceeding in size a four or five months' pregnancy.
8. In tumors not rapidly increasing in size.
9. In growths not complicated by malignancy.
10. In tumors temporarily to control bleeding and prepare the patient for operation.
11. In tumors uncomplicated by calcification.
12. In tumors free from infection and necrosis.

RADIUM IN MENORRHAGIA AND METRORRHAGIA OF INDETERMINATE ORIGIN IN YOUNG WOMEN

Radiation in intractable uterine bleeding occurring in young women is finding a definite field of usefulness, but the employment of the element in cases of this type must be done with utmost caution. The danger of establishing a permanent amenorrhea or premature menopause should be kept vividly in mind. If excessive doses are used, this unfortunate incident is highly probable, although if small doses are employed, this unhappy sequel is very improbable.

The menstrual flow can be readily modified and controlled by radiation. Small doses may cause the menstrual process temporarily to cease, but reestablishment usually occurs anywhere from a few months to two years. Temporary amenorrhea is caused by the radium destroying the sensitive maturing graafian follicles, while the less sensitive primordial follicles are not affected. We have used it in patients as young as fourteen with excellent results. In one patient of thirty-five in whom a heavy dose was administered the menstrual flow totally disappeared. One menstrual period occurred at the end of one year, but no bleeding was observed thereafter.

DANGERS

The greatest danger in young women, of course, is the establishment, not only of a permanent amenorrhea, but sterility. It has been observed that radium is prone to bring about sterilization, even though the menstrual cycle recurs normally. Conception after radiation is rare and the exception rather than the rule. Only a few full term post-radiation conceptions, as we have already indicated, are recorded in the literature. Why ovarian function apparently continues with relative sterility is inexplainable.

RADIUM IN BLEEDING OF THE MENOPAUSE

For abnormal bleeding of the menopausal years not associated with gross lesions, but due to uterine myopathy, expressed in the terms chronic metritis, subinvolution or uterine fibrosis, radium is preeminently the best agent at our disposal. The application of radium, however, in these cases, indeed as in most others, should be preceded by a diagnostic curettage. Malignancy must be eliminated. Adnexal disease must be excluded also. The bleeding must have its origin in benign lesions of the endometrium or uterine wall. Practically every case can be cured. Application is made withn the uterine cavity.

S. M. D. Clark, of New Orleans, reports thirty-two cases of this type with complete relief in all. Watkins also has had good results in menopausal hemorrhage, though the number of cases he reports is small. Stacy reports two hundred and sixty-three cases of menopausal hemorrhage, some due to small myomas. In one hundred and eighty-five cases, or 70.35 per cent., bleeding ceased. Of this number in only fourteen were two applications required. In most, the bleeding stopped entirely at the end of two months. General improvement was noted in two hundred and thirty-one patients and one hundred and fifty-seven increased in weight. No improvement was reported in sixty-eight. Seven hundred mghrs. or twice the dose used in patients thirty-five years of age and under was employed. A second treatment is given if necessary, any time after the fourth week.

Heyman sums up his experience in the treatment of climacteric hemorrhage, in the Radium Institute of Stockholm, Sweden. From 1916 to 1920, there were treated forty-nine cases of uncomplicated climacteric hemorrhage. All were treated with radium. In forty-one patients a single exposure sufficed to control the symptom. In thirty patients the application was intrauterine and in eleven the element was simply applied against the vaginal cervix. In seven patients two exposures were necessary and in one patient three were given. Amenorrhea was produced

in thirty-two patients and oligomenorrhea in six een. In one patient the treatment was unsuccessful.

Uncomplicated menorrhagia or metrorrhagia, after the age of forty, is exceptional. The appearance of either at this time should always be regarded with grave suspicion and an underlyng pathologic basis, especially malignant disease, should ever be kept clearly in mind.

John G. Clark, in a personal case, had a patient who went to full term, but unfortunately she died of postpartum hemorrhage.

S. M. D. Clark, of New Orleans, reported five cases of bleeding occurring in young women. The youngest patient was seventeen, the oldest thirty-three. In these complete suppression of menstruation occurred in four. In one patient menstruation returned to a normal two day type. The dose was rather large, much larger than generally recommended. It ranged from one thousand three hundred and seventy-five mghrs. to three thousand eight hundred and fifty-nine mghrs.

Stacy radiated one hundred and twenty-two cases of abnormal bleeding occurring in women under thirty-five. Some of these patients had small myomata. Nineteen of the patients were twenty-five or under. Of the one hundred and twenty-two cases reported, ninety-eight of the patients were heard from; the bleeding was controlled in 55.6 per cent.; a second application was required in seventeen. The average dose was two hundred and ninety-three mghrs. In twenty-five patients the periods were reported normal in amount, in eleven they were irregular and scant, and a complete cessation occurred in six of the cases.

Three of the patients, aged twenty-eight, thirty and thirty-four, respectively, received a three hundred mghr. dose. Hysterectomy was performed later in six; one patient (thirty-three years old) eight months after treatment who did not improve; one after one year on account of pelvic pain, although the bleeding had ceased; in another patient who did not respond to treatment and in still another who also failed to obtain relief. In one patient, a girl of sixteen, a hysterectomy was done thirty-three months after radiation on account of continued bleeding. At operation a cancer of the fundus was found. In seven others myomectomy was done because the symptoms were not relieved by radiation. Two of these patients were radiated twice. In young women Stacy recommends enough radium to control the symptom, but not enough to stop functional menstruation. However, there is no definite way to judge the dose. It is best to begin with a small amount and gradually repeat, if necessary, after a three, four or six month interval. In women over thirty-five years of age, larger doses may be used, because during these ages the menstrual process is not so important.

Usually fifty mgs. for fourteen hours with repetition, if necessary, will afford relief. Stacy reports four hundred and seventy-eight cases beyond the age of thirty-five and three hundred and forty-nine of these patients were heard from. The treatment was repeated in sixty-four and operation was done later in twenty. Of these twenty only four required two exposures and two were operated upon before the full benefit of radium was obtained. The results were satisfactory in all.

RADIUM IN ENDOCERVICITIS AND CERVICITIS

Radiation acts most favorably in cases of endocervicitis associated with infection and leucorrheal discharge. The infection is readily overcome and healing of the granular surface is usually quite prompt. All cystic formations usually disappear at the end of two or three months. A. H. Curtiss has had excellent results in cases of this character. H. H. Wiggers noted a decrease in cervical leucorrhea routinely after radiation. Curtiss recommends fifty mg. within the cervical canal from twelve to sixteen hours. Occasionally he found a second treatment necessary. One hundred and twenty-six patients have been treated by Curtiss. Twenty-two could not be followed. Of the one hundred and four patients subsequently studied, ninety recovered, seven improved and seven were not benefitted.

RADIUM IN DYSMENORRHEA

The application of radium is being extended to the treatment of obstinate cases of dysmenorrhea and certainly this simple measure should be chosen in preference to any radical surgical procedure. No type of surgery has seemed to give these patients relief. Dilatation and curettement has uniformly failed. No specific drug has been discovered, so radiation, if used with caution, it is asserted, will produce gratifying results.

The same care and the same law applies to its administration in dysmenorrhea as in bleeding occurring in young women. Only small doses should be used and the interval of application should not be less than three or four months. The possibility of a premature menopause should be kept constantly in mind and the inhibitory influence of radium upon conception should not be forgotten. Radium in dysmenorrhea, then for these reasons, in our judgment should be used only in exceptional cases.

RADIUM IN CARCINOMA OF THE VULVA

The operative treatment of cancer of the vulva has never been satisfactory. We have never seen a patient recover permanently after operation. Radium seems to offer more hope for these cases than does operation. Burnam reported eighteen cases of cancer involving the vulva and urethra with recovery in more than fifty per cent.

RADIUM IN TUMORS OF THE BLADDER

Benign tumors readily disappear. Carcinoma is favorably influenced and in some cases the growths disappear. Recurrence is common in the latter, but even these are sometimes favorably acted upon. The infiltrating type is the most obdurate. In my work I have used radium capsules through the urethra and one patient thus treated has remained well since. In another I used the element through a suprapubic wound, applying fifty mgh. for twelve hours. The local symptoms were ameliorated but, owing to the presence of extravesical extension, the patient finally succumbed. Combined intravesical and extravesical application may be made and the element may be used in conjunction with the x ray.

William Neill, Jr., advocates intravesical treatment by emanation, using 0.5 millicurie of radium emanation to destroy one c. c. of growth. In this way the entire tumor is attacked. The emanation pearls are left permanently in place. They discharge their maximum action by the end of seven days, but continue more or less active for at least twenty-eight days. This intensive plan should not be repeated until after a lapse of two months. Many of the emanation pearls escape with particles of the growth and are discharged during urination.

George G. Smith treats vesical carcinoma along similar lines. J. T. Geraghty uses similar treatment and has found the means most valuable in the therapy of bladder tumors. In malignant disease he found that recurrence took place in thirty per cent. of the cases treated, but in most instances even these responded to treatment. In three very refractory recurrent cases treatment was ineffectual. Geraghty applies from one hundred to two hundred and ten mgs. of radium element. This is applied and held by a special cystoscope to the tumor surface. Applications are made for one hour and are repeated from one to three times weekly, depending upon the size and nature of the tumor and the reaction of the patient. In order to prevent injury of the normal tissues, Geraghty advocates partial distention of the bladder cavity with water. Since this plan has been adopted, radium burns, previously not uncommon, have not occurred.

The results of radiation of neoplasms of the bladder has proved fairly satisfactory. H. H. Young says that even in advanced malignant disease cure is not impossible. Papillomata disappeared readily. Young advised that papillomata first receive fulguration, followed by the application, to their bases, of radium. J. T. Geraghty states that papillomata, both benign and malignant, disappear under the influence of radium, but in the infiltrating type of cancer of the bladder resistance to treatment is quite marked.

RADIUM IN PRURITUS VULVÆ

It has been found that radiation acts very favorably in pruritus and many instances are recorded in which the itching has responded after other measures have failed. One can safely say that pruritus is frequently relieved and occasionally completely overcome by thorough radiation. In some cases the x rays seem to act more energetically than radium, while in others the response is more decided to the latter. In some instances pruritus may be overcome by the use of both x rays and radium, applying the radium directly to the region most markedly affected and the x rays to the general skin surface.

Knox recommends that the x ray treatment be carried out for several weeks and exposure be made once or twice each week. In the application of radium, especially in young women, small doses are used and repeated. Usually the applications are made until a reaction in the skin is noticed. This is always allowed to subside before the exposure is repeated.

CARCINOMA OF THE BREAST

D. J. Quigley treated six cases of Paget's disease of the nipple with radium and four years subsequently four of the patients or sixty-six per cent. were living and well. Direct application was made to the nipple. Fifty mgs. were used with one half mm. of silver and one half mm. of rubber as screens.

Z. A. Johnston uses radium similarly in these recurrent cases. He believes localized recurrent nodules should be treated this way and that thus they will early disappear. In these cases radium is superior to x rays. In larger affected areas the x ray is best, but in these a combination of both may be used.

Johnston believes that all breast cancers show a better surgical outlook if radiated prior to operation, since without this plan in one out of every five so-called early cases, the patients who are operated upon without this plan die. This is true even though there is no macroscopic or microscopic evidence of malignant extension to the axillary lymphatics. He believes, therefore, that every operable breast cancer should have at least one complete series of deep x ray therapy, especially crossfiring about the axilla, supraclavicular region and mediastinum.

It is the custom of Johnston to treat these socalled operable cases with radium packs over the tumor proper and in the axilla, especially if there is any evidence of adenopathy. This is followed in three weeks by the insertion of needles into the growth and in three weeks subsequently, the patient is submitted to the surgeon. This allows a more direct action upon the neoplasm than is the case in a surface application and besides the lymphatics are probably treated at the same time. Removal can be accomplished then, he believes, provided there is no mediastinal involvement, with expectation of permanent cure.

George E. Pfahler has used radium in recurrent localized nodules and lays claim to better results than with x rays, especially those localized along the line of the incision, the supraclavicular and axillary regions. He uses it because application can be brought in direct contact with the nodules. We have used it in similar cases with better results than afforded by the x ray.

RADIUM IN CARCINOMA OF THE RECTUM

A. E. Pinch does not believe it justifiable to advise operation even in comparatively favorable cases of rectal carcinoma when the patient is sixty years and beyond, since by the use of radium life may often be prolonged in fair comfort for four, five or six years. Colostomy, he believes, should be advised in almost every instance because the constant passage of fecal matter over the growth invariably stimulates its activity.

W. J. Mayo has found that radium provides good results in inoperable carcinoma of the large intestine and upper rectum.

G. W. Crile advocates radium prophylactically following radical operation for rectal carcinoma.

We have used radium salts both in a curative and palliative way after colostomy for advanced cancer of the rectum. By this means we have, we feel certain, prolonged life and added both systemic and local comfort to these unfortunate patients.

The author's bibliography will appear in his reprints.

Primary Sarcoma of the Stomach

With a Report of a Case of Myofibrosarcoma

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Although sarcomata of the stomach is relatively infrequent compared with carcinomata, their occurrence is frequent enough to demand greater attention by the surgeon and not be regarded as a clinical curiosity. Their infrequency may be shown by the fact that there is but one specimen of gastric sarcoma in 840 specimens of sarcomata in the Berlin Pathological Institute. Eusterman and Senty report twenty cases at operation at the Mayo Clinic between the years of 1907 and 1921. During this same period operations had been performed on 2,146 cases of carcinoma. Sarcomata are even more infrequent than benign tumors of the stomach, as shown by Eusterman in his report of twenty-seven cases occurring between 1907 and 1921, as against 2,146 carcinomata. Sarcoma was found present in only four cases in an analysis of 928 cases of gastric cancer by Smithies in 1919. In 27,250 abdominal sections at the Mayo Clinic during five years (Masson) there were eight sarcomata of the stomach (quoted by Haggard). Douglas gathered together 227 cases and added three cases himself to the literature. These with the additional cases added by Erdmann, Fischer, Haggard, Basch, Gillette, and Pistocchi, and the one included in this report, make altogether 238 cases of sarcoma of the stomach on record. Of these 116 came to operation, the rest being found at necropsy. The case reported by Pistocchi is interesting as the symptoms followed a severe trauma of the epigastrium, and he is inclined to accept a direct connection with trauma as the causative factor in this case.

FIG. 1.—Specimen showing sarcoma of the stomach.

Sarcomata are connective tissue growths, hence they never develop from the mucous membrane. They may develop from connective tissue, muscle fibre, lymph nodules, or from endothelial cells of the lymph spaces of the stomach. According to their tissue origin they may be fibrosarcoma, myosarcoma or lymphosarcoma and endotheliomata. According to their histological structure they may be classed as either roundcelled or spindlecelled sarcomata. The average age limit is 41.6 in sarcomata in contrast to carcinoma, which is 61.2 (Douglas). Lymphosarcoma occurs earlier than the other forms but is found present more frequently. Sarcomata may involve the entire stomach or form a large mass growing from it. Lymphosarcomata originate from the submucous layer and spindlecelled sarcoma from the muscularis, while carcinomata originate from the mucosa. This point is of significance because it makes ulceration when present in sarcoma a late manifestation. From its gross appearance the roundcelled sarcoma is the type most likely to be mistaken for carcinoma, as it infiltrates and most often involves the pylorus. This type of sarcoma is more malignant and more readily metastasizes. The spindlecelled type is more likely to be circumscribed or pedunculated, presenting itself externally beneath the serosa or internally beneath the mucosa. This type is slow to metastasize, is best to deal with surgically, and offers a far better prognosis. The grafting of sarcoma upon a myoma or fibroma is probably of no uncommon occurrence specially when the benign tumor has existed for a long time. Pyloric obstruction in sarcoma of the stomach is infrequent even in the lymphosarcoma which involves the pylorus, as the pyloric opening is rarely encroached upon although the pylorus itself is greatly infiltrated.

SYMPTOMS

Frequently there is an entire absence of symptoms throughout the course of the disease; this is especially true when the growth is situated in the pars media and when the mucous membrane is not involved. On the other hand, the symptoms may vary from the mildest expression of gastric distress to the severest manifestations seen in gastric cancer. A preoperative diagnosis is seldom made and it is only by gross examination or after careful microscopic examination that a correct diagnosis can be made. The one condition from which it is desirable to differentiate sarcoma is carcinoma. The importance of this arises from the fact that sarcoma is a much slower growing tumor and affords a far better chance for a radical cure in the early cases. Carcinoma, which always involves the mucous membranes, will give rise to more gastric irritation, while sarcoma, as a rule, does not invade the mucosa. Carcinoma also is most commonly situated at the orifices and in the body of the stomach, while sarcoma is found along the curvatures; hence carcinoma is much more likely to give obstructive symptoms. This is a late manifestation of sarcoma, not from an encroachment on the pyloric opening but due to an infiltration of the pyloric ring and stomach walls. In spite of the fact that sarcoma of the stomach does not invade the mucous membrane, there is usually found an absence of hydrochloric acid and the presence of lactic acid and a slight trace of blood, which may be accounted for by the secondary anemia which is always present.

RADIOGRAPHIC EXAMINATION

Although positive diagnosis of sarcoma of the stomach is not possible by radiographic examination, it is the greatest aid we have in making possible a diagnosis of the presence of an operative lesion. The points that favor a positive diagnosis

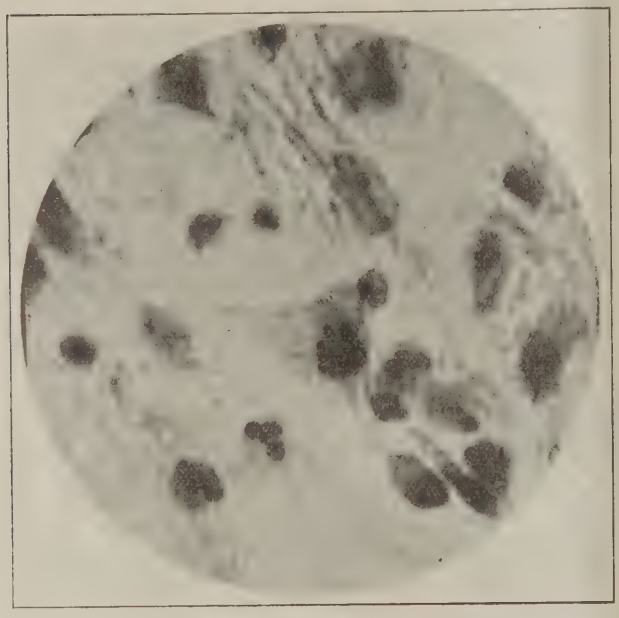

Fig. 2.—Myofibrosarcoma of stomach, section through tumor.

of sarcoma are the filling defect with comparative smooth edges while in carcinoma one is more likely to get irregular outlines in the radiograms.

Case.—W. T., aged forty-nine, watchman, was admitted to North Hudson Hospital August 30, 1923, with but one symptom, namely, marked weakness. This was specially noticeable on exertion, when he became dyspneic. This weakness began about February, 1923, and gradually became worse up to the present. About four months before admission he noticed he was becoming paler, which had steadily increased up to the time of his admission. He had absolutely no other symptoms, no vomiting, no abdominal pain, appetite was good, bowels costive at times, and at various times during the past fifteen years he had suffered from a slight bleeding from small external piles. During the past six months he had lost twenty-five pounds. The interesting thing about this case is the fact that the patient suffered from no gastric symptoms at any time and sought relief for anemia and the associated symptoms of weakness and shortness of breath.

The physical examination was entirely negative, except for a marked secondary anemia. There was no tenderness in the epigastrium, and no mass palpable. Blood examination on admission showed hemoglobin 25 per cent., red blood cells 2,456,000, white blood cells 6,200, color index ½, polymorphonuclears 60 per cent., lymphocytes 40 per cent. September 4, 1923, four days after admission the hemoglobin dropped to 20 per cent. and the red blood cells to 2,000,000, no change in white blood cells or differential count. Feces showed a slight trace of blood with benzidine test, no ova or parasites present. Urine was normal; blood pressure 95-60, blood chemistry normal, Wassermann negative. As yet we were unable to make a diagnosis outside of a marked secondary anemia. A gastrointestinal radiographic examination was decided upon as a routine and much to our surprise a large tumor of the lesser curvature of the stomach was clearly shown somewhat above the pylorus. Dr. H. V. Broeser suggested that this seemed to be a possible benign tumor inasmuch as the radiograms showed the presence of rugæ which are not usually seen in carcinoma. This was more emphasized in the fluoroscope as the tumor (endogastric) could easily be pushed about and was easily movable. In spite of these findings the diagnosis did not seem to conform with that of benign tumor in the presence of such marked anemia. Stomach analysis showed free hydrochloric acid absent, slight lactic acid and a slight postive benzidine.

Blood transfusion was given on September 10, 1923, one thousand c.c. given, which brought his hemoglobin up to 30 per cent. and red blood cells to 3,200,000. There was again a slight fall of the hemoglobin and red blood cells during the next few days reaching 25 per cent. and 2,776,000. A second transfusion was given September 17, 1923, following which the hemoglobin rose to 55 per cent. and red blood cells to 4,976,000. One thousand six hundred c.c of blood was given. Inasmuch as this man's only symptoms were due to anemia following the transfusions, he was entirely free from symptoms and felt perfectly well.

Radiographic examination by Dr. H. V. Broeser, September 5, 1923, showed at the fluroroscopic ex-

Fig. 3.—Myofibrosarcoma of stomach, section through tumor.

amination no hindrance or adhesions at the under surface of the flexures. Colon normal in contour and mobile. Cecum ptosed. Malted meal drink disclosed stomach of the orthotonic type, axis oblique with a large defect on the lesser curvature. No peristaltic waves, yet striæ were seen, mobility good.

pylorus irregular. The duodenum was at right of median line, normal in shape and size.

A diagnosis of tumor on the lesser curvature, pars media, was made. A possibility of its being benign was based on the mobility and stria.

Operation was performed on September 19, 1923. Medium epigastric incision was made under block anesthesia (local). General anesthesia was begun after opening the abdomen. On exploring the abdomen a large endogastric tumor the size of an orange was found arising from a fairly large base from the lesser curvature and the posterior gastric wall about three inches above the pylorus. The mass was well up under the left costal margin and for this reason was never felt preoperatively. The mass was freely movable within the stomach. The peritoneum covering the base of the tumor was

FIG. 4.—Radiogram showing practically complete emptying after four hours. Taken four weeks after operation.

smooth and normal in appearance but at the upper edge of the base of the growth toward the cardia there was considerable infiltration as the tumor mass merged into the normal gastric wall. On first examination the mass gave one the impression of being a large benign fibroma but on close examination of this infiltration a diagnosis of fibroma which has undergone a sarcomatous degeneration seemed certain. There was no metastasis present in the glands along the lesser or greater curvatures nor in the liver or retroperitoneal. The case seemed very satisfactory for a resection and ultimate cure. A pylorectomy was done according to the Billroth type II method with a posterior gastroenterostomy. About two thirds of the stomach was removed. Convalescence was smooth and uneventful. The patient was discharged from the hospital on October 14, 1923. Radiographic examination showed a small remnant of the stomach with a good functionating gastroenterostomy and the stomach emptying itself practically completely before six hours. On discharge his hemoglobin was 62 per cent. and red blood cells 4,468,000.

Pathological examination by Ward J. MacNeal, P. Klemperer, E. Morgan.

The specimen was the lower portion of the stomach including the pylorus. Stomach wall was 75 mm. along the lesser curvature and 100 mm. along the greater curvature. In the interior of the stomach was a fungoid mass sixty-five by seventy mm. in diameter and attached to the wall of the stomach by the pedicle, forty-five mm. in diameter. The surface of the mass was somewhat smooth but on the pedicle it was velvety. On section the tumor mass was found to be solid and resilient. The cut surface was light gray and opaque for the most part, but there are orange yellow patches, six to thirteen mm. in diameter, not sharply outlined.

Sections showed the gastric wall close to the tumor allowing a definite distinction of the coats of the wall. The glands of the mucous membrane were regular in size and shape. The membrane propria was rich in lympoid cells, scattered among which plasma cells and a few polymorphonuclear leucocytes might be found. In the deeper part of the mucosa occasional small lymph follicles were seen. The muscularis mucosa was sharply defined, and showed a few areas of round cells. The mucosa consisted of loose areolar tissue, blood and lymph vessels and nerves and contained a few areas of lymphatic infiltration. The subserous connective tissue was thickened and showed slight roundcell infiltration. In the adjacent fat tissue there are several lymph follicles and diffuse infiltration by lymphocytes and plasma cells.

The tumor compressed the mucosa. The glands became scarce and the corium contained more leucocytes and a considerable number of Russell's bodies. The muscularis mucosa could hardly be recognized. The submucous layer was greatly thickened. It had not the structure of loose areolar tissue, as described above, but was filled by a growth which was rather sharply defined from the mucosa but not the muscularis. This growth was composed of large spindle-shaped cells which were surrounded by delicate and coarse fibres which, in part, formed interlacing bundles. Among these cells there were others which were cylindrical and contained a prismatic nucleus. The arrangement of these cells was very loose, particularly in the superficial areas of the tumor, and many polynuclear leucocytes and lymphocytes could be found in the meshes. There were also lymph follicles which were found surrounding small blood-vessels. In the deeper parts near the muscularis areas could be found where the cells became more polygonal and their cytoplasm filled with vacuoles. Here the tumor cells infiltrated the muscular coat. The muscle bundles were pushed aside and compressed by the invading cells.

Special stains were applied to ascertain the nature of the tumor cells. In Van Gieson stain the spindle-shaped cells were surrounded by fibres which took the red stain, whereas the cells with the rodlike nuclei took a distinct yellow color. Therefore, the former could be considered as connective tissue cells

and fibres; the latter, however, had muscular elements. The polygonal cells with the vacuolized cytoplasm showed in Soudan stain preparations a great number of deeply red stained globules which in part filled the cells. In examination with the immersion lens occasional mitotic figures could be found.

A diagnosis of myofibrosarcoma was made.

Examination of the patient eight months after operation showed him to be in excellent health. Up to the time this article was written there had been no evidences of a recurrence. He had gained sixty pounds in weight, had no gastric symptoms, no abdominal pain. Hemoglobin ninety-five per cent., red blood cells, 4,800,000.

SUMMARY

Sarcoma of the stomach occurs in about one per cent. of all stomach tumors. It is less frequent than benign tumors. The average age incidence is 41.6 years in contrast to carcinoma which is 61.2. Lymphosarcoma occurs earlier than the other forms, and is found more frequently. Lymphosarcoma is more apt to be infiltrating and more prone to ulceration than the spindlecelled or myosarcoma but not nearly so frequent as carcinoma. Spindlecelled or myosarcoma is more apt to form a large endogastric or exogastric tumor. The pylorus is less often attacked or obstructed than in carcinoma. Metastasis also occurs less rapidly than in carcinoma, whereas myosarcoma is even less prone to metastasis than the lymphosarcoma. The prognosis of lymphosarcoma is bad. Of twelve cases reported from the Mayo Clinic the operative results were as follows: Six were inoperable for resection; in the six with gastric resection two patients died after operation from peritonitis, one returned four months later with a recurrence, one returned with a recurrence five months later, one returned seven months later with a recurrence, and the last patient was operated upon too recently to be considered. These cases, however, were all of the lymphosarcoma variety. Myosarcoma and fibrosarcoma are far more favorable even than carcinoma.

435 Palisade Avenue.

A Prophylactic Gas Filtering Ventilator for Summer Autumnal Coryza and Asthma*

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There is now accumulated enough clinical and scientific data to enable us to consider the relation between gases and sickness. The unstable blood of the asthmatic is hypersusceptible and highly sensitized to hematolytic gases.

"Nearly all varieties of gases and many combinations can be found upon the ground in certain localities and at certain seasons of the year; some originating from the ground itself, some from stagnant water, as swamps, some from animal excreta and some from the decomposition of animal and vegetable matter. Among the ground gases are found the carbon, chlorine, bromine, sulphur, ammonia, phosphorous, oxygen, nitrogen and hydrogen group combinations" (1).

In a final analysis many hematolytic gases come from putrefying proteins and they do not all reach the blood by inhalation but often are absorbed from the intestine. Putrefaction generates a hematolytic gas as shown by the sudden death of second day silo fillers or during the wilting and putrefying stage of recently cut corn. This is also demonstrated by the sudden death of those entering sewers. Fermentation generates a blood stabilizing alcoholic gas as shown by the fact that after the cut corn in the silo ferments, the silo is not only safe but a stimulating and invigorating place to enter.

The end metabolic products of all living animals are either hematolytic gases or substances that rapidly generate hematolytic gases. Growing vegetation under the influence of daylight absorbs carbon dioxide and hematolytic ground gases and gives off blood stabilizing gases, such as oxygen, which are not only beneficial but an immediate and vital necessity to animal life.

In order partially to protect my asthmatic and summer autumnal coryza patients from hematolytic ground gases, I have constructed a gas filtering ventilator. This gas filter contains charcoal, calcium chloride, zinc oxide, magnesium silicate and sodium bicarbonate and is designed mostly for organic vapors, ammonia, sulphur and acid gases and those that the lime will absorb or neutralize. If used for automobiles, oxide of manganese and copper should be added to destroy carbon monoxide or auto exhaust gas as they are used in the universal gas mask for this purpose (2). Automobiles, trains and street cars should install gas filtering ventilators as they not only filter out poisonous gases but they prevent chilling from draughts.

DIRECTIONS FOR MAKING GAS FILTERING VENTILATOR

The size and construction of these gas filtering ventilators will depend upon the space to be ventilated, size of window, etc. An efficient size for a bedroom is three by twelve by twenty-seven inches, or of a length to fit the width of the window.

The lumber used in making the frame is one half by two inch material.

The size of the copper wire screen box when completed is three by twelve by twenty-seven inches or a length to fit the width of the window.

First, make a frame two by twelve by twenty-seven inches.

*Read at Chicago before the American Allergy Association, June 10, 1924.

Second, make two frames out of the one half by two inch lumber for copper wire covers, size on outside, twelve by twenty-seven inches.

Third, tack copper wire on the two cover frames.

Fourth, nail on the inside copper wire screen cover.

Fifth, fill the box half full of charcoal.

Sixth, add the desired chemicals which in this case are unslaked lime, zinc oxide and magnesium silicate (powdered talc) and sodium bicarbonate, made into a pasty emulsion.

Seventh, finish filling screen box with charcoal.

Eighth, screw on outside screen cover.

Ninth, make two slide wood bolts, size one half by two by seven inches with a slot one quarter by three inches in middle for two screws with washers.

Tenth, screw the slide bolts on each end and outside half of top side of screen box; slide bolts to hold screen box in window.

Extra: When desired, a frame or tube may be attached to the inside of the gas filtering ventilator for an electric fan to give forced suction ventilation.

Asthmatics whose unstable hypersusceptible blood is highly sensitized to summer autumnal night ground gases should, if residing in the country, protect themselves by the following simple precautions:

1. Select a house on as high a hill or mountain as possible with a gravel soil and away from swamps, stagnant water or cess pools, outhouses, barns or manure piles. The cellar should be dry, clean and well ventilated.

2. Select for the bedroom, the highest room in the house.

3. Install a gas filtering ventilator in the bedroom window.

4. Have no carpets or straw mats on bedroom floor.

5. Select a single iron bed with fine, woven wire springs.

6. Use clean, freshly aired woollen blankets for mattress, covering and pillows.

7. Purchase ten pounds of unslaked lime and put it in ten one quart basins, then set them on the bedroom floor. These ten basins full of unslaked lime may be stacked up in a closet during the day. The lime must be stirred occasionally to keep the unslaked lime at the top, and when all slaked, thrown out and replaced by new. The unslaked lime absorbs blood disintegrating gases and gives off blood stabilizing gases as chlorine. Hence limeworker's immunity to tuberculosis. Two quart pans of coarse salt should also be kept in the bedroom for the same reason.

Chlorine is an element normally found in the blood, and chlorine gas in physiological doses has a blood stabilizing action. The steam from slaking lime benefits some asthmatics.

A simple method for administering the chlorine and lime dust treatment is to stir up the lime in the pan. One tablespoonful of sodium chloride (common salt) added to one only of the ten quart pans of unslaked lime will, together with the other nine pans of unslaked lime without salt, generate all the chlorine gas that the asthmatic can stand and at the same time enough to benefit him. If salt were added to more than one of the ten pans of unslaked lime and kept in a closed bedroom at night, it might generate an overdose of chlorine gas. The unslaked lime in the ten one quart pans should be stirred up with a big spoon every night as they are taken from the closet, unstacked, and set upon the bedroom floor. A good way to separate the slaked lime from the unslaked lime is to sift it over in a large eight quart pan through a sieve or ordinary kitchen colander.

Vedder and Sawyer use chlorine gas as a therapeutic agent in common colds, coryza, rhinitis, pharyngitis, laryngitis, bronchitis, whooping cough and influenza. They state that, "Employees in plants producing or using chlorine have always believed themselves free from respiratory diseases. This was brought to our attention because, during the war, when the chlorine plant at Edgewood Arsenal was producing to full capacity, the great influenza epidemic struck the post and the hospital was filled to overflowing. It is stated that no cases were recorded among the operatives of the chlorine plant, although every other organization on the arsenal had its full quota of cases" (3).

Chlorine gas in therapeutic quantities would tend to prevent influenza in two ways; first, by adding stability to the blood, and second, by crowding out, keeping away or diluting blood disintegrating gases.

Chlorine gas from a tank or inhaling apparatus as used for colds should not be used on asthmatics or those afflicted with summer autumnal coryza.

8. Keep the atmosphere in the bedroom at a blood stabilizing temperature, humidity and light. The temperature should be about seventy degrees and the humidity about sixty-eight. Have no pipeless kerosene or gas stoves in the room nor smoky lamps. The best light is an electric light which should be kept burning all night, especially if the patient is asthmatic, as light adds stability to the blood. The best heat would be that of the open wood fireplace, as many blood disintegrating gases are rapidly combustible and would thus be burned up or carried out the chimney.

9. Never have cut or potted plants in the bedroom.

10. Saltpetre should be kept in the bedroom and if the patient is asthmatic, it should be burned on retiring and during the night as it generates a blood stabilizing gas and one that reduces the viscosity of the blood and favors expectoration.

11. It is well, when possible, to have a tank of oxygen on hand for an emergency. The gas or ozone produced by violet rays has a blood stabilizing action that has benefited some asthmatics who have generators in their bedrooms.

12. When possible, an electric fan should be in the bedroom to be used on hot, humid nights.

13. Various blood stabilizing and capillary tonic gases can be liberated or generated in the room from volatile substances such as camphor gum, pure grain alcohol, dried coniferous leaves or needles and dried eucalyptus leaves. The alcohol should be placed in two saucers, half an ounce in each. At first I tried oil of eucalyptus and oil of turpentine in place of the leaves, but I found that some gases that were not hematolytic as large doses of gas from some volatile oils as oil of turpentine, would, through their depressing or paralyzing action upon the cardiovascular system, produce a cardiovascular dyspnea, which, if severe, would result in an asthmatic, hematolytic crisis.

14. Asthmatics should sleep alone.

15. Asthmatics, on dewy or foggy nights, should retire to their gas filtered bedroom as soon as the dew falls and should not leave it in the morning before sunrise, unless they wear the United States Universal Army Gas Mask. If riding out, they should ride in a closed vehicle equipped with a gas filtering ventilator. The aim is to keep blood disintegrating gases out of the asthmatic's bedroom, to add blood stabilizing gases to it and to keep it at a blood stabilizing temperature, humidity and light. It is not intended as a treatment for asthma.

My observations of prevailing blood disintegrating meteorotelluric phenomena during certain epidemics of sickness are as follows:

GROUP I

1. Diminished sunshine from a shortened day, day shorter than night, cloudy, partly cloudy or hazy weather.
2. Day temperature of about 86°, followed by cool, heavy dew nights.
3. High humidity or relative humidity above 68.
4. Stale, windless, atmospheric stasis.
5. Hematolytic, atmospheric gas accumulations.
6. Diminished atmospheric magnoelectricity, elasticity and absorption.
7. Atmospheric pressure comparatively or regionally low or falling.

This group is associated with summer autumnal coryza, asthma, cholera infantum, cholera morbus, dysentery, eczema, heat retention or heat exhaustion.

GROUP II

This is the same as group one, except with a day temperature below 60°, followed by chilly or freezing nights.

This group is associated with grippe, influenza, whooping cough, asthma, bronchitis, rheumatism, measles and diphtheria.

GROUP III

This is the same as group two, except with a comparatively or regionally high or rising atmospheric pressure. This group is associated with pneumonia and asthma.

Osler (4) says that "It is by no means confined to the poorer districts, but occurs in the houses of the better classes, particularly when the plumbing is defective." This statement shows an association between sewer gases and diphtheria. Malarial fever and asthma are associated with swamp ground gases; Dengue fever, malarial fever and asthma with semitropical swamp and ground gases; yellow fever and asthma with tropical ground gases. Coryza and asthma occurring in the spring-summer season are not as severe or epidemic as the summer autumnal types and are associated with a moderate degree of Group I, except diminished sunshine from the shortening day.

These observations show that hematolytic gases constitute an important etiological factor in the production of much sickness and disability. The world war showed that gases constituted an important etiological factor in asthma, as many soldiers who were not asthmatic before their war gassing were rendered asthmatic by it, and have been asthmatic ever since.

Gas from burning sulphur will bring on an attack of asthma more quickly than anything else, by increasing the viscosity of the blood and causing a dyspnea which if severe, will soon terminate in an asthmatic hematolytic crisis. Hematolytic gas, as carbon monoxide, will produce a fatal hematolysis more quickly than any other known substance. Clinically, hematolytic atmospheric gases do not produce any local irritation to the mucous membranes when they are inhaled, but immediately upon entering the blood they produce chemical disturbances or disintegrations that throw the blood out of equilibrium. In order to regain its equilibrium, the blood dumps its disintegrated material along the line of least resistance, producing coryza, asthma, vomiting, diarrhea or eczema. The dumping of the disintegrated material with its acidosis is what causes the irritation.

A study of 1,351 cases of asthma and summer autumnal coryza during the last twenty-nine years has convinced me that certain gases, especially summer autumnal night gases, have a sufficient blood disintegrating action to constitute one of many etiological factors.

Asthmatics and summer autumnal coryza victims residing in a well paved and sewered city, on going into the country during the summer autumnal season to stay overnight on a windless, heavy dew, ground gas accumulating night, frequently have their asthma and coryza aggravated or precipitated. This group can go into the same country during the same season and stay overnight on nights when blood disintegrating ground gases are less prevalent, as dewless nights, very windy nights or nights with a heavy, constant rain, without any unusual disturbance. Day trips into the country during the same season do not aggravate this group, unless the trips are made during a drought on a day which has had a short shower, generating blood disintegrating ground gases and fog similar to a dewy night.

Hematolytic gases are increased at night through an absence of sunheat, sun electromagnetism and sunlight, increased humidity and also due to the fact that vegetation sleeps at night which prevents its absorbing ground gases. Hematolytic gases are increased during the summer-autumn equinoctial season, or from August 11th to November 6th, due to the shortening day, the cooling of the summer heated earth and the wilting or decomposing of ripe or cut vegetation. They are increased also during the winter-spring equinoctial season or from February 4th to May 5th by a thawing of the winter frozen earth, which liberates ground gases before vegetation has begun to grow and absorb them.

Ground gases are increased in swampy sections and in semitropical and tropical lowlands. Night ground gases are more prevalent in the open country than in a well paved, sewered and lighted city.

Many asthmatics in the country have asthma only during the seasons of the year when ground gases are increased, or in a city residence where sewer gas is markedly prevalent as near sewer openings or disposals, or where sulphuric acid gas from burning coal accumulates. Hematolytic atmospheric gases are diminished by a scattered population, altitude, low humidity, sun, wind, electromagnetism, good atmospheric absorption, dry, rocky, sandy, gravel or alkaline soil, a frozen surface of the earth, oceans, large lakes and deserts.

The fatal blood disintegrating action of certain

ground gases when sufficiently concentrated is demonstrated by the sudden death of those going down into some wells or certain mines, or death from inhaling natural fuel gas. Mild manifestations are demonstrated by the chills and fevers of those working in deeply excavated trenches and the chills and fever of plowmen.

The threshing of mouldy grain liberates a hematolytic gas. After one day's threshing of mouldy grain at my farm in the fall of 1915, five out of a crew of ten threshers had their blood disintegrated by the gas from the mouldy grain or "were gassed." This gassing was clinically manifested during the following night by chills, fever, headache, nausea, coryza and dyspnea with chest pains or the symptoms of grippe, influenza and bronchial pneumonia.

Freshly cut, wilting, drying and curing vegetation, such as hay, grain, corn, vegetable tops, flowers and weeds, give off hematolytic gases that often produce coryza and asthma, and if they are allowed to mold or putrefy they give off hematolytic gases that may produce coryza, asthma, pneumonia, or influenza. The gases used in the world war produced coryza, asthma, bronchial pneumonia, influenza or eczema, regardless of existing meteorotelluric conditions. Ordinary atmospheric hematolytic gases, except the swamp and tropical gases, do not contribute to the production of epidemic sickness, unless they are accompanied by the meteorotelluric phenomena mentioned in Groups I, II, and III.

Some gases that are not hematolytic will indirectly produce a hematolysis in several ways. Three of which are: 1. Shutting off the supply of oxygen by their irritating action, producing a congestion of the mucous membranes of the respiratory apparatus, as chlorine in concentration, the acid gases or the phosphorus and sulphur derivatives. 2. Crowding out oxygen by too great a dilution, as too much nitrogen. 3. By the production of putrefactive products through death of tissues, owing to a vesicent or blistering action, as that of mustard gas.

Most acid gases except those resulting from fermentation are both caustic or vesicant and hematolytic. An acid soil generates acid ground gases and an alkaline soil generates alkaline blood stabilizing ground gases. Some irritating or secretory nonhematolytic gases, such as the brominated compounds, will produce lachrymation, sneezing, rhinorrhea and dyspnea, but not genuine coryza or asthma unless this disturbance results indirectly in a hematolytic crisis.

The chief and most essential element in the production and maintenance of life and health is gas. Variation in the gas supply is a frequent contributing cause of sickness and death. The easiest and quickest death is that caused by gas. Those who have been rendered unconscious by automobile exhaust gas state that they had no warning of danger or feeling of discomfort.

Blood disintegrating gases seek their lowest level, the same as water, thus settling in valleys or lowlands. The higher the altitude, the fewer blood disintegrating gases are found. At an altitude of seven thousand feet, practically no hematolytic gases are encountered and no gas hematolytic crisis occurs with the resulting sickness as summer autumnal coryza, uncomplicated asthma, malarial fever, dengue fever or yellow fever.

The weather bureau in its daily reports of meteorotelluric phenomena should include atmospheric electromagnetism and the atmospheric gas composition. Wind, like the sun, has a blood stabilizing action. It blows away blood disintegrating humidity, and hematolytic atmospheric gases and increases the atmospheric electromagnetism.

The winter of 1923 and 1924 in Buffalo was a steady, even, cold winter. The ground was continually frozen and covered with snow most of the time. Strong winds prevailed with good atmospheric electromagnetism, good atmospheric absorption, medium humidity, clear white or blue skies with an unusual abundance of sunshine.

The constantly frozen earth lessened the formation of ground gases and the winds prevented their accumulation. As a result of these blood stabilizing, meteorotelluric phenomena, there was but little sickness, consisting mainly of mild epidemics of nerve exhaustion, nausea, flatulency and diarrhea. Some had a violent diuresis in place of diarrhea. We escaped our usual epidemics of pneumonia, grippe and diphtheria. When the ground thawed during the spring equinoctial season, the ground gases were liberated, resulting in blood disintegrations which were manifested clinically as epidemics of mumps, measles, tonsillitis, colds, coryza, asthma, boils, scarlet fever and whooping cough.

Good atmospheric electromagnetism is manifested by white morning skies, poor sound vibrations, poor telegraphic and radio vibrations, the rapid absorption of moisture, sparks from stroked fur, increased energy and activity. Excessive atmospheric electromagnetism tends to produce nerve exhaustion. Sending electric currents through the air, as by radio, probably tends to increase the atmospheric electromagnetism. The aeroplane has a disturbing influence upon atmospheric phenomena that will necessitate the restriction of its use.

A scientific fact never changes. The ancients recognized in the region of swamps a morbific effluvia floating in the atmosphere as a product of the decay or putrefaction of animal or vegetable matter that produced sickness with chills and fever or malaria which they called a miasm; but now, with our knowledge of gases, these socalled swamp miasms can be identified and classified as definite hematolytic swamp gases.

Some of the ground gases which have been recognized, their composition determined and that we are very familiar with are natural fuel gas used in lighting and heating our houses or heavy carbureted hydrogen, olefiant gas or ethylene, fire damp or light carbureted hydrogen, stagnant pool gas where vegetables are undergoing putrefaction or carbureted hydrogen, choke damp or carbonic acid gas and the deadly carbon monoxide found in some mines, wells, or silos and formed whenever carbon is burned with an imperfect supply of oxygen. In the ordinary city with its numerous manufacturing plants, nearly all known hematolytic gases are prevalent inclding sewer gas, carbon monoxide, sulphuric, phosphoric acid, the natural fuel gas, and illuminating gas.

In lowland cities during foggy, windless, humid, chilly, smoky weather the city hematolytic gases are very evident.

Clinically, there is no specific cause that produces

the unstable blood of the asthmatic or that disintegrates it to produce an attack of asthmatic dyspnea, but a combination of causes. Likewise there is no specific treatment or prevention, but its treatment and prophylactic measures must be applied as indicated.

There are numerous agents and combinations that will disintegrate the unstable blood of the asthmatic sufficiently to produce an attack of asthma, many of which come under the following classification: 1, hematolytic atmospheric gases; 2, putrefactive products, obtained through food, water, overeating, retentions or accumulations; 3, meteorotelluric phenomena, and 4, humidity, accompanied by either a hot, chilly or freezing temperature.

Among the numerous causes of summer autumnal coryza, the two chief are hematolytic atmospheric gases and heat humidity retentions. Disturbances from blood disintegrating atmospheric gases, when accompanied by certain weather conditions, result in numerous manifestations that vary from those due to the blood being thrown slightly out of equilibrium with the resulting headache to a severe meteorotelluric, physicobiochemical, hematolytic crisis or influenzal death.

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Foreign Bodies in the Esophagus with Report of Six Cases

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Before the days of endoscopy the question of foreign bodies in the esophagus was of necessity a more or less speculative one. The physician often had to depend largely upon the veracity of the patient's statements or those of the parents. This suggests the possibility of error in diagnosis.

Some of the saddest pages in surgical annals are filled with cases of foreign bodies in the esophagus. We can readily appreciate the untold difficulties with which operators had to contend, when we consider the insufficient and inadequate appliances and instruments used and today regarded as most unscientific and dangerous. In those cases where it was definitely decided that a foreign body was lodged in the esophagus and the symptoms were sufficiently urgent, the external approach to the esophagus exposed the patient to the great dangers of such an operation, injury to important structures and the risk of infection. Where the patient survived the operation and was fortunate enough to escape infection a prolonged period of convalescence was required.

Fig. 1.—X ray of patient in Case III, showing the shadow of the button.

Then we have a large number of cases in which the foreign body became lodged in the esophagus and in which bold attempts were made to force the intruder downward into the stomach. For the accomplishment of this bouginage and the stomach tube were employed. In a small number of cases this procedure proved effectual. However, in many instances there resulted irreparable damage to the esophagus with subsequent death. Laceration of the esophageal walls was followed by violent and fulminating esophagitis and periesophageal inflammation. Perforation of the muscular coats resulted in mediastinitis and mediastinal abscess which rapidly proved fatal. A foreign body that originally only entered the mucosa as a result of instrumentation was forced through the esophageal wall and in several instances produced hemorrhage from perforation of the aorta. In cases where the foreign body was not recognized and was therefore permitted to remain a long time, there resulted necrosis and infection with suppuration extending to the trachea with consequent edema and asphyxia.

Today we are fortunate in having at our disposal the x ray and fluroscopy, and with the newer methods for examination and extraction the procedure is now rendered safe and certain.

There are certain factors, however, that govern the prognosis in cases of foreign body in the esophagus. The first factor that comes to our minds is that of location along the swallowing tube. This is not of such vital importance to the esophagoscopist. No matter where it is lodged it can easily be detected and grasped. Nevertheless what is of greater interest is the relation of the axis of the foreign body to the axis of the esophagus thus influencing the physiological action of the latter. We can readily understand that a foreign body situated so that it will permit of passage of none or little food, will give rise to more disturbing symptoms. The patient's attention is called quickly to the seriousness of the condition and medical aid is sought early. However, where the foreign body is of such a nature that it will occlude the esophageal lumen only partially and so permit overriding of food, deglutition is not interfered with to a great extent and patients are likely to defer seeking medical advice. It is this delay that influences the prognosis in many cases. Only after complications make their appearance do these patients consider their condition.

This then brings us to a second consideration that influences the prognosis, e. g., the length of time that elapses from the date of inception of the foreign body to its discovery and removal. Its presence will exert pressure upon the esophageal walls and produce necrosis of the tissues. Where the patient is fortunate enough to avoid immediate infection with sloughing and perforation there results hyperplasia and thickening from nature's effort to protect the surrounding tissues. This hyperplasia later, even if the foreign body is removed, organizes and gives rise to stenosis of the esophagus, a condition which is intractable and requires prolonged treatment. If the foreign body is not removed, it ultimately causes death.

A matter of vital importance influencing the prognosis and one which even at this late date does not seem to be recognized sufficiently is that the best and safest route for a foreign body to leave the human economy is the way it entered. The mortality in esophagus cases seems to be directly proportionate to the amount and extent of previous futile and harmful instrumentation. The blind attempt at forcing the intruder downward is most unscientific, dangerous, and in many instances results in irreparable injury and many of the socalled simple cases of extraction have been so rendered difficult and complicated. The majority of complications can all be traced to such faulty and indiscriminate procedures. Therefore it may be stated that the prognosis is far better in cases where no tampering has been done..

The last factor, one which to our minds is the most important and upon which depends the ease of extraction, the possible complications that may develop and lastly the outcome, is the character and shape of the foreign body. It is evident that sharp pointed foreign bodies, such as chicken bones, pins, and others, can easily penetrate the esophageal mucosa and occasionally the muscular coats, and in consequence become more or less fixed thus producing direct injury to the esophagus. The etiology of all subsequent infections and complications can thus be traced. When the mucosa or submucosa are injured there results an acute phlegmon at the site of injury. The submucous variety being the more common type. This form usually remains localized and the patient recovers. However, when the foreign body is of such a nature that it penetrates the esophageal wall, then there results the socalled periesophageal or mediastinal abscess to which the patient rapidly succumbs.

The six cases we are reporting were seen during the past two years. Each case has been selected from our series because of some special interesting feature connected with each particular one.

Case I.—Mrs. R., aged sixty-two, swallowed a chicken bone on the evening of January 11, 1923. Immediately following she complained of a sensation of choking and fullness and gradually pain made its appearance. That same evening she saw a physician who attempted to force the bone downward using his finger. These maneuvers were rewarded with added pain and vomiting of blood. The patient spent a miserable night and the next morning her condition seemed to be much worse. Swallowing of solids was impossible and that of fluids was associated with sharp pain in the anterior of the thorax and in the back on the same level. The patient was referred to us the next morning, and examination of her throat disclosed some redness. The larynx was normal. With such a typical history we deemed it advisable to send the patient to the hospital. An x ray was taken and the bone located midway between the cricopharyngeal and aortic constrictions.

Extraction the same day at 4 p. m., time three minutes; local anesthesia. A size 10 Kahler Brunning esophagoscope was introduced and upon entering the esophagus below the cricopharyngeal constriction the mucous membrane on the post esophageal wall was found to be markedly reddened and edematous. Pressure against this mass caused an expression of a foul smelling pus which seemed to exude from the uppermost point of the swelling. After swabbing and drying the field, the point of the chicken bone came into view, but the bleeding soon obscured it. Again drying the area the foreign body was plainly visible projecting into the lumen of the esophagus, the other end being held fast in the esophageal wall. With alligator forceps the intruder was grasped and extracted. The entire swelling seemed to have disappeared. An application of twenty-five per cent. argyrol was made and the patient put to bed. Nothing was given by mouth for twenty-four hours, after which the diet consisted only of fluids for another forty-eight hours. The patient seemed to be immediately relieved. On the third day her temperature was normal and deglutition was not accompanied by pain. On several occasions we reesophagoscoped the patient and so followed the progress of healing, which was complete in ten days. She left the hospital at the end of two weeks, cured.

It is evident in this case that the foreign body pierced the esophageal wall but did not perforate. About its lodgement there resulted an acute phlegmon. The timely recognition of its presence and early removal prevented the more diffuse inflammation which may have caused death of the patient, as will be exemplified in the next case.

Case II.—Mrs. E. R., aged sixty, swallowed a fishbone on April 19, 1923. She immediately resorted to the usual household and oldfashioned remedies such as producing emesis by tickling the throat and also swallowing dry bread. These were of no avail and she saw her family physician who treated the condition more or less lightly. However, he inserted the stomach tube on several occasions with no relief. Three days elapsed before we saw her again, at which time the following was noted: she was an obese woman and suffered from diabetes. She complained of severe spontaneous pain anteriorly on a level with the unciform cartilage and sharp lancinating pains in the back at the same level. The act of deglutition was not associated with pain until after the food began its course downward; apparently until it reached the site where the bone was lodged and then the patient noted exacerbation of her pains and she vomited. Nothing but liquids could enter the stomach and this with difficulty. The history was typical, and the patient was admitted to the Beth Moses Hospital on April 12, 1923. At time of admission the temperature was 101, pulse 100, respiration 28.

Extraction under local anesthesia, time four minutes. The No. 14 Kahler Brunning esophagoscope was introduced and at about twenty-five cm. from

the teeth margin the fishbone was seen running transversely across the lumen of the esophagus. The surrounding esophageal tissue was swollen and edematous but there was no evidence of an actual phlegmon at this location. Only that part of the bone extending beyond the forks was visible, the remainder being buried in the esophageal wall and the other end protruding possibly into the mediastinum. With alligator forceps the bone was grasped and extracted but with some difficulty, the forks of the bone having fixed it firmly in the esophageal wall. There was little bleeding and the area was swabbed with twenty-five per cent. argyrol. The patient was put to bed, the diet restricted to fluids after twelve hours and the esophagus medicated with a mixture of bismuth glycerine. The patient did not seem to be very much relieved after extraction. The pain was severe with deglutition. Her temperature on the three successive days rose to 104 and she appeared acutely ill. On the morning of the fourth day she had a profuse hemorrhage following which she went into shock. She rallied after several hours complaining of marked dyspnea and cyanosis. The patient succumbed the same evening. No autopsy was permitted.

This case exemplifies the utter folly of delay and the great risk in employing the stomach tube. From the conformation of the bone it is very evident that it became fixed in such a way that any manipulation other than esophagoscopy tended to force the bone through the esophageal wall rather than dislodge it. This patient developed in consequence a mediastinitis and possibly a mediastinal abscess to which she succumbed. We regret greatly in not being able to report the postmortem findings.

Case III.—M. G., female, aged six, was referred to us on February 18, 1921, with the following history: seven days previously the child swallowed a button and immediately came to her mother and told her story. For twenty-four hours after the child was unable to swallow solid food, but liquids were taken with some difficulty. Her family physician treated the matter not too seriously and advised waiting a day or two. That he was justified seemed apparent for the inability to swallow gradually subsided and on the fifth day deglutition was practically normal except for a slight pain a moment or two after swallowing. Otherwise the child was perfectly comfortable; she played as usual, slept soundly at night, and seemed to eat normally. The child had been seen by several physicians for the discomfort on swallowing, and they attributed this as due to injury of the throat by the button at the time of its passage downward. The patient had been purged rather vigorously, and the stools were carefully watched but the button had not been recovered. At the time of our examination the child appeared comfortable, and demonstrated that she could swallow water quite normally. Examination of throat and hypopharynx revealed nothing abnormal. Her temperature was 100°, pulse 100, respiration 24.

With such a history we urged röntgenological examination and admission to the hospital. The patient was admitted to the Williamsburg Hospital on February 26, 1923. The x ray immediately told the story as shown by the accompanying photograph. The button was located on a level with the second rib.

Extraction took place February 26, 1923, time two and a half minutes. Under light ether anesthesia the child's size esophageal speculum was introduced and the button brought into view. With a pair of alligator forceps it was firmly grasped and withdrawn. The post esophageal wall was slightly ulcerated and twenty-five per cent argyrol immediately applied. The latter procedure was repeated upon two successive examinations, and the ulceration was seen to heal rapidly. The child made an uneventful recovery, and left the hospital five days later.

The outstanding features in this case are first, the length of time the intruder remained in the esophagus. It was recovered nine days after its inception. Secondly, the absence of any alarming symptoms. After twenty-four hours the child was able to swallow and experienced only slight pain on deglutition.

Case V.—R. S., aged nine years, male, swallowed a fifty cent piece on the morning of July 20, 1923. Immediately after there were no untoward symptoms, there being no dyspnea or interference with respiration. However, the child complained of a heavy feeling in the upper part of the chest. The mother was under the impression that the coin had descended and consequently waited until about noon before she consulted her family physician. At this time the child complained of actual pain in the anterior of his thorax and in the back at the same level. The pain seemed much aggrevated at any attempt to swallow. All foods as well as liquids were regurgitated. It was now that the mother became alarmed and sought her family physician.

The physician seemed rather sceptical because of the size of the coin and treated the matter rather lightly. He ordered a cathartic and assured the mother that the coin would pass out.

However, toward evening the youngster was very uncomfortable and complained bitterly of pain in the chest. Consequently the mother sought another physician the same evening. The latter seemed to recognize the gravity of the situation, and immediately advised an x ray. The accompanying photograph shows the intruder lodged at the cricopharyngeal constriction.

The child was admitted to the Beth Moses Hospital the same evening and under light ether narcosis the coin was quickly removed. The esophageal mucosa was markedly congested and edematous. The child remained in the hospital three days and left on the fourth day discharged as cured.

CONCLUSION

In conclusion, we wish to state that it should be the endeavor of the physician to recognize these cases early and never to underestimate or minimize those symptoms of disordered deglutition when there exists the faintest suspicion that a foreign body has been swallowed. The patient should receive the benefit of at least an x ray before being dismissed. We wish to caution against unscientific procedures and the employment of impliments that long ago should have been relegated to the surgical junk heap. Early recognition and early removal will insure rapid recovery and spare the patient unnecessary pain and suffering, and lastly, avoid those complications to which these patients usually succumb.

Two of the authors' cases omitted will appear in the reprints.

Simplified Transfusion Apparatus*

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FIG. 1.—Funnels adjusted in rubber stopper.

Simplified apparatus in blood transfusion is always desirable, if practical. For this reason the following equipment is described:

A graduated percolator (five hundred c. c.) fitted with rubber stopper; two glass funnels pass through the stopper, one (forty-six mm. with 228 mm. stem) reaching to within two mm. of bottom of bottle, and one (thirty-one mm. with seventy mm. stem) inverted with the glass tube extending above the stopper. The inverted funnel is so inverted in a flanged hole that only about three mm. shows below the bottom of the stopper. Over this is fastened several layers of gauze. A rubber tubing (three mm. in diameter and forty-five to sixty cm. long) with adapter and a sixteen gauge needle completes the outfit. In addition, a Meeker blood letting, or Wassermann, needle may be used conveniently, preventing the repeated use of one needle.

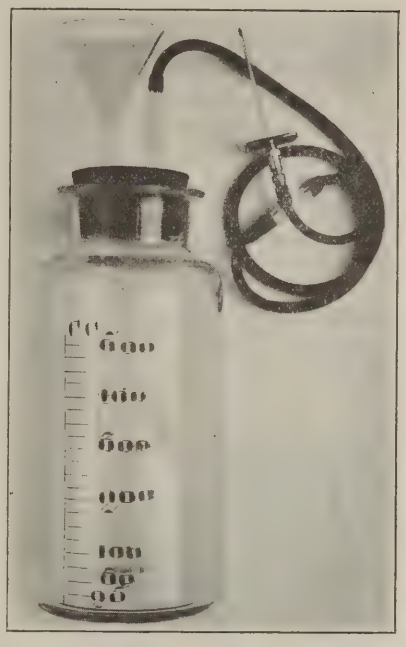

FIG. 2,—Apparatus assembled and ready for use; graduated percolator fitted with rubber stopper and funnels.

When this apparatus is assembled and sterilized, it is ready for use.

For sodium citrate transfusion; five c. c. of the citrate is poured into the intake funnel, and the container turned on its side, revolved several times and then inverted allowing the fluid to flow by gravity through the tubing. It is then placed right side up. The container is agitated gently as the admixture of blood and citrate solution runs into the funnel. When sufficient amount of blood has been secured the needle is removed from the donor and a small pledget of cotton placed lightly in the intake funnel. The citrated blood is now ready to be transported to the recipient. After the venipuncture has been made, the percolator is inverted. Care should be taken to see that the stem of the intake funnel is free of obstruction to inlet of air. The fluid is allowed to flow through the tubing until the air is expelled, then the adapter is attached to needle.

*From the Hospitals of the Graduate School of Medicine, University of Pennsylvania.

ADVANTAGES

1. Simple.
2. Practical.
3. Minimizes chances for infection.
4. Permits of transportation.
5. Filters blood as administered.

A New Retractor for Amputations of the Extremities

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One feels rather reticent in attempting to add to the already overburdened list of surgical instruments, still another, although in the opinion of its inventor, it may seem quite practical. Fortunately, in the light of modern surgery, so illuminated by the contributions of the immortal Lister, Carrel, Dakin, and others, amputations today are growing less and less, yet, at times, this procedure is indicated and must be met.

It is then, with the intention of simplifying the technic in amputations of both the upper and lower extremities, an awkward procedure at its best, that this retractor was devised.

The flaps being prepared it is our practice to apply the instrument to the soft parts, before paring the periosteum back, thus giving a clear and unobstructed view of the field of operation. The instrument is easily and quickly applied.

It accomplishes the following results:

1. Steadying of the limb by the hands of the assistant passed through the loop handles of the retractor.

2. Thorough retraction of the soft parts, and protecting them from injury by the operator's saw.
3. The services of but one assistant.
4. Dispensing with the use of towels about the soft parts while the saw is in operation, thus preventing the annoyance of having the teeth of the saw catching in their substance.
5. Avoiding injuring the assistant's hands by a sudden manipulation of the saw.

DESCRIPTION OF THE INSTRUMENT

The instrument essentially consists of two cup shaped blades, viz., a male blade, and a female blade both securely riveted to form a sliding joint at the point of attachment. The female blade slides over the male blade, and may be quickly and easily fixed at almost any adjustment desired, to grasp either femur or humerus, depending upon where the operation is being performed. While I originally designed this instrument for amputations of the thigh or upper arm, at times, particularly in large framed or muscular individuals, it is quite handy for lower leg work, and may so be adjusted as to embrace the tibia and fibula simultaneously.

The winged set screw and a stud holds the blades firmly at the adjustment desired by the operator.

The looplike construction of the handles, swinging freely from a roller joint attachment on each blade, is perhaps one of the most valuable assets of the retractor, permitting as is apparent from the accompanying illustrations, the four digits of each hand to slip through each handle, while they and the thumbs steady the extremity, making firm and adequate retraction at the same time (Figs. 1, 2, and 3).

The instrument designed in two sizes meets every requirement for adults. The blades may be of solid construction, or perforated if desired. If perforated, the perforations must be small enough to prevent the muscle fibres from teasing through.

862 Carroll Street.

Fig. 1.

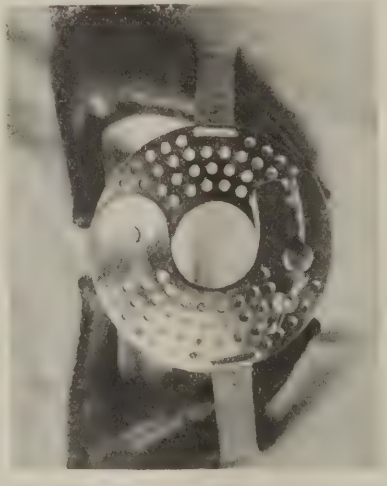

Fig. 2.

Fig. 3

Fig. 1.—Instrument Open.
Fig. 2.—One view of instrument closed, showing position of the hands in retracting and steadying the extremity at the same time.
Fig. 3.—Same as Fig. 2, showing the closed instrument at a different angle.

Tetanus as a Postoperative Complication

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A wound received under circumstances where contamination with animal excreta or with soil is either a fact or a possibility immediately suggests the possibility of tetanus. To the average practitioner, tetanus is always associated with an external wound that is infected with animal feces or with soil. The possibility of this dread complication occurring without an external wound, under conditions where contact with soil or with animal excreta can be absolutely ruled out, is usually not entertained until the disease has made such inroads that the patient is practically doomed. Because of the rarity of this complication and because of the failure of early and therefore timely recognition of the disease, I present the following case histories:

Case I.—R. M. was admitted to the first gynecological service (Dr. Joseph Brettauer, director) of the Mount Sinai Hospital, October 4, 1911, with a diagnosis of fibroid uterus. Except for an attack of typhoid fever when she was fifteen years old, the previous history of the patient was negative. On October 6, 1911, there was performed a hysterectomy, bilateral salpingooophorectomy, and appendicectomy. Both the operation and the postoperative course immediately following were uneventful. The first dressing, on October 11th, showed primary healing of the abdominal wound. On the twelfth day following the operation the patient complained of stiffness of the jaw and was found to be rather restless. Examination of her reflexes revealed nothing

abnormal. On the next day, she was unable to open her mouth. The jaws were held rigid and the neck was stiff. The knee jerks on both sides were exaggerated. Babinski reflex was not obtained. Voluntary flexion of the head upon the chest could not be performed. Passive flexion was extremely slight. Rotation of the head was limited but not quite so much as flexion. The jaws could not be separated nor moved from side to side. The upper and lower extremities were perfectly free from rigidity. In the evening there were already present on both sides the Babinski, Oppenheim and Mendel reflexes. The patient was now given one thousand units of tetanus antitoxin intraspinally. At 3 p. m. of the same day there was noted slight twitching of the fingers in both hands. The restlessness had increased and the patient was now complaining of severe headache. At this time (3 p. m.) two thousand units of antitoxin were injected into the neighborhood of the abdominal incision. At 8 p. m. there were administered two thousand units subcutaneously, and at 9 p. m. the patient received an intravenous injection of fifteen hundred units. At 3:30 a. m. of the following day, October 20th, the patient was dyspneic and somewhat cyanotic. Within twelve hours the temperature had risen from normal to 106°. At 9 a. m. the patient was comatose and the temperature had risen to 109°. Shortly afterward she died.

Case II.—W. G. was admitted to the Surgical Service of Dr. Beer at the Mt. Sinai Hospital on November 11, 1912. The patient gave a history of left loin pain three years before admission. Ten months ago, following an injury to the left side, there had developed hematuria for twenty-four hours. Following an automobile accident four days before admission to the hospital, the patient was taken with severe left lumbar pain, and had been passing bloody urine since that time. Physical examination showed marked rigidity on the left side, especially in the upper half, and the presence of a tender mass in the left loin. Cystoscopy revealed the escape of blood from the left ureter. On November 12, a left hydronephrotic kidney, the seat of a marked hemorrhage, was removed. A first dressing, on November 16th, showed that the wound had healed by primary union. Early on November 19th headache and rigidity of the neck developed. This muscular rigidity increased and towards evening involved the muscles of the abdomen and of the back. The patient had difficulty in swallowing and could open his mouth only slightly and with great effort. Knee jerks were increased and the Babinski reaction was present. At 8:35 p. m. he received 1,500 units of tetanus antitoxin subcutaneously. Within the next twelve hours, the muscular rigidity had become more marked and painful spasms developed in practically all the muscles. At 11:50, on the morning of the 20th, 11,500 units of antitoxin were given intravenously. At 9 p. m. of the same day 13,500 units were administered intraspinally. The muscular spasms, however, became more marked and more frequent. The breathing was now labored. At 12 p. m., the patient was stuporous, and was having severe convulsions. On November 21st, at 1 a. m., the patient died, with a temperature of 107° and severe convulsions.

Case III.—F. U. was admitted to the gynecological service (Dr. Joseph Brettauer, director) of the Mount Sinai Hospital, November 27, 1922, with a diagnosis of fibroid uterus and lacerated cervix. With the exception of a mild attack of postpartum sepsis eleven years ago and an attack of influenza three years ago, her previous history was negative. On December 1, 1922, a complete hysterectomy with bilateral salpingooophorectomy and appendicectomy was performed. Six days later, the first dressing was made and it was noted that the abdominal wound had healed by primary union. On the eleventh day after operation a foul purulent vaginal discharge developed, and a pelvic examination revealed the presence of an exudate in the bases of the broad ligaments. On December 15th, just two weeks from the day of operation, it was noted at about 1 p. m. that the patient was unable to open her mouth completely, and that the attempt was painful. Palpation of the parotid regions was moderately painful. No enlargement of the glands, however, could be made out, nor were the lobes of the ears elevated. There was no rigidity of the neck. Examination of the throat revealed nothing abnormal. One hour later there was a slight but distinct rigidity of the neck, and the limitation of motion in the jaw was more marked. No abnormal reflexes could be elicited either in the upper or in the lower extremities. At 4 p. m., three hours after the first abnormal signs had been noticed, the patient was given an intraspinal injection of 15,000 units of tetanus antitoxin. At the same time 8,000 units were administered intramuscularly. On the following day, the rigidity of the neck showed a slight lessening in intensity and the jaws could be opened slightly but distinctly more than twenty-four hours previously. She again received 15,000 units of the tetanus antitoxin intraspinally and 8,000 units intramuscularly. The improvement during the rest of that day continued progressively. On the next day, December 17th, the improvement had become so distinct, that it was decided to withhold further specific treatment. The recovery was complete.

Tenbroeck and Bauer (1), in a study of the intestinal contents of native Chinese, and Tulloch (2) in a similar study with oversea's soldiers, have showed that tetanus bacilli were isolated in normal individuals in 34.7 per cent. and 33.3 per cent., respectively, of their cases. With this as a starting point, the source of infection in the three cases cited above can be quite readily accepted as the intestinal tract and the exciting traumatism as the appendicectomy in two cases, and the intestinal injury (resulting from the automobile accident) in the third. Bearing this in mind, it is rather remarkable to note the extreme rarity with which tetanus is found as a postoperative complication in operations upon the intestinal tract or in injuries involving this tract.

As regards the outcome in the three cases here reported, it seems only proper to call attention, 1, to the very early recognition of the infection, and 2, to the intraspinal administration of very large doses of antitoxin in the third case, and to credit the favorable result to these two factors.

I wish to thank Dr. Brettauer and Dr. Beer for the privilege of reporting these cases.

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2. Tulloch: *Journal of Hygiene*, Vol. xviii, 1919-1920.

Practical Therapeutics

DEFICIENCY OF THE HALOGENS IN MODERN DIETETICS*

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INTRODUCTION

Today the importance of what Mendel terms "the little things" in nutrition is being realized as never before. Yet, three quarters of a century ago Chatin appeared before a commission of scientists of the Paris Academy and presented evidence as to the vital relation iodine deficiency and thyroid disorders have to each other. True, Bauman's discovery, in 1895, of iodine in the thyroid gland and Kendall's isolation of thyroxin had not then materialized, to say nothing of the recent strides in biochemistry and the physiology of nutrition.

These reveal a logical interrelation making it possible to grasp and complete deductions that in Chatin's time could have been only conjecture. So in the light of present day knowledge there are many manifestations of iodine deficiency or thyroid gland derangement which may be fundamentally important yet do not come under the group complex of thyroid disease. In fact my contention is that iodine deficiency or halogen imbalance (since bromine and iodine, two members of the halogen group, are both found normally in the thyroid) is at fault in conditions clinically removed from thyroid disease and that disturbed physiological function may arise from deficient iodine intake. This disturbed function, ultimately classified as a disease entity, if detected early may possibly be corrected by the simple expedient of attempting to bring the daily thyroxin output up to normal.

Exactly what normal is and how to ascertain definitely when that norm is reached, are not so simply determined. At the risk of being accused of "looking through iodine spectacles" further introduction will be curtailed. To visualize how vitally the minute quantity of iodine elaborated by the thyroid gland is concerned in its effect upon bodily function and mental activity, we have but to recall that the cretin child is lacking in the ability to assimilate iodine. In laboratory parlance, he is halogen free.

However elusive and infinitesimal some of our essential food elements may be, elucidation of the vitamine group by McCollum has led to an appreciation of the possible abnormal results which may accrue from a continued lack of any basic element in the human physiology, however minute the quantity. When there is a general realization of the necessity for a normal balance of these body activators, and we have learned to apportion correctly the salts and minerals necessary to insure effective physiological function, we shall have made a tremendous stride toward an adjustment of our psychological as well as physiological problems.

Howland and Kramer's results on calcium and phosphorus metabolism, are examples in point. Not only have they shown that these are interdependent in their assimilative function, but that the absorption of both is apparently activated by the synchronous ingestion of codliver oil or some of its elements. Certain basic principles underlying all physiological activity require the fulfillment of their specific conditions before the different organs can function normally. For instance, hypertonic or hyperosmotic solutions, by their effect upon the interchange of body fluids, wield an irresistible and unremitting influence not only upon food absorption, but through the addition of electrolytic ions greater impetus is given to crystalloid diffusion and nerve impulses.

Elimination, a perpetual motion for some seventy years, is constantly aided through kidney activity by means of osmotic pressure in the glomeruli (1), as well as through the excretory function of the epithelium of the tubules. Thus our vital processes are dependent upon, or accelerated by, the various salts and dialyzable substances entering into our daily food. Metabolism itself is activated by normal dilution of the physiological fluids carrying glandular secretions, and nerve impulses facilitated by a favorable reaction of the surrounding menstruum. Therefore the practical question arises, can we check up on these dietetic deficiencies and are there such apparent?

Laboratory tests for the calcium and phosphorus ratio in the blood serum have become routine practice in indicated cases, and we consider no diet adequately balanced unless due weight is given to the mineral intake, the various food combinations and their ease of assimilation. There still remain dietetic deficiencies whose physiological importance are not yet generally recognized but which suggest great possibilities.

This group—the halogens—is comparable to the vitamines in that no known functional test for their isolation has yet been announced, the insufficiency of which sooner or later is productive of functional or organic disability. Like the vitamines, this lack looms large, chiefly because of modern methods of living and of obtaining our food. McCarrison states that in avitaminosis, abnormal conditions arise in the intestinal wall. A further parallel between vitamines and halogens may exist in unsuspected disturbances of the intestinal mucosa by which faulty function originates from halogen deficiency. Certainly hypothyroidism is characterized by the inhibition of normal peristalsis.

Halogens, important dietetically—perhaps chiefly because of the deficiency of their one solid group member—iodine—have an intimate identification with the body fluids, in that they not only may furnish a food directly to the functioning thyroid gland, but also in that they are considered capable of forming electronegative saline compounds which supply nourishing or activating media to the body cells. This physiological principle may be of greater import than we at present recognize and were we cognizant of any practical test for estimating the amount of organic iodine in the circulation at a given time, there could be the same facility in adjustment of this de-

*Read before the Southwestern Pediatric Society, November 7, 1923, and the Los Angeles County Medical Association, April 17, 1924.

ficiency that we now have in the correction of a low hemoglobin. A method recently elaborated by Stieglitz at the Johns Hopkins Hospital, whereby iodides can be specifically identified in the tissue cells, may prove ultimately to be a clinical means for estimating the available thyroxin and thus restoring functional balance (2).

However, our present means of recognizing any such inadequacy as exhibited in a subthyroid condition must depend upon clinical and deductive evidence. As a result, minor symptoms indicative of slight thyroid inactivity may develop gradually without constituting the complete clinical picture, definitely diagnosed as hypothyroidism, and hence are without recognition. Protection against such insidious onset requires sufficient thyroid food to equalize energy demands.

If it is shown that modern methods have made difficult the daily intake of necessary thyroxin precursors, there follows as a logical sequence the possible overwork of the thyroid gland. This results sooner or later in its degeneration and diminished functional activity. No work can be accomplished effectively by the human mechanism without a normally functioning thyroid. To assure this secretory balance of the gland, there are required regular food iodine carriers, which while not comparable in amount to the daily intake of sodium chloride, are comparable in their necessity of being regularly ingested. The normal saline of the blood, for example, constitutes a dilution of some sixty thousand to ten million parts, while the iodine relation is approximately one to ten million or one sixty thousandth as much.

The United States Geological Survey of iodine bearing waters strikingly illustrates the general seaward drainage of the halogen solutions, showing that only sodium chloride has remained in the original bed deposits because of its lesser basic affinity. It is this extreme solubility which accounts for the depleted iodine belts extending north along the Appalachian Mountains into Vermont, thence west through the Great Lake region to Montana, Washington, and to the south including the Rocky Mountains and Pacific States.

According to the United States Army survey, these vast areas are shown definitely to lack in available iodine. In these regions consideration of the required halogen intake must be given and it is highly improbable that man's daily glandular elaborative requirements are here adequately met by the ordinary foods. Conclusions based upon the United States Naval Academy records for 1921 and 1922—in the attempts of Carpenter and Ferguson to stimulate growth by endocrine therapy—state that there is possibly an appreciable percentage of thyropenia throughout the United States.

When we remember that the total storage capacity of the normal thyroid is approximately one quarter to three quarters grain of iodine (3) it is quite possible that our reserve supply is depleted in these days of increased nervous tension much more frequently than we are accustomed to consider. Inhabitants of vast sections in the United States may receive barely one four hundredth as much iodine through their water and food intake as is available to the dweller within more favored localities.

A further deficiency factor lies in the refinement of table salt, producing chiefly sodium chloride, with the total elimination of the remaining halogen group, thus accentuating the handicap to an already depleted glandular system, which originally received replenishment with the daily salt intake and iodine bearing drinking water.

Only when we analyze some of the apparent pathology in the light of its being possibly perverted physiology, do we appreciate the possibilities in a restored halogen balance.

Rabinovitch (5) reporting on epilepsies during the war, says: "There appears to be an anatomical substratum, a proliferation of the subcortical neuroglia in all types. This is present in transitory as well as permanent epilepsy, of Jacksonian, convulsive and psychic types."

Is not this proliferation possibly comparable to the cell edema present in myxedema and other acknowledged manifestations of thyroid insufficiency? And if these phenomena are at all similar in their exhibition, may it not be possible that they spring in part from a common deficiency? Again we have an example demonstrating the intimate association between glandular activity and utilized iodine in Kerr's report from Camp Lewis, Washington (6), regarding the examination of 21,182 men, with the findings of 1,276 goitres, a percentage which corresponds with the natural iodine content found in soil and water in that locality. Furthermore, the United States Government report from the War Department gives a ratio of seventeen to one revealing thyroid glands enlarged, when those dwelling in mountainous districts are compared to the inhabitants of the sea coast regions.

These functionally enlarged thyroid glands may be considered as overworked or underfed.

Statistics accumulated wherever goitre is endemic in widely varying locations throughout the United States, specifically Michigan and Utah—even though both have vast natural sodium chloride deposits—reveal a close association between endemic goitre and iodine distribution.

An interesting corollary to the distribution of iodine by vaporization of sea spray is found in McClendon's report (7). He says that "Rain falling within three miles from the sea coast has one hundred times as much iodine as rain falling a thousand miles removed from the coast." However, it is only one part to the hundred billion at that, and therefore negligible as a contributor of iodine.

The inverse ratio of goitre and available iodine may be much more far reaching in its influence upon health than we at present appreciate. Cretinoid types and pure cretinism, i. e., with no functioning thyroid gland, are known to be frequent in the districts shown by tests to be lowest in iodine content and where by their isolation a fairly definite record of food and atmospheric conditions can be checked.

These suggest a most practical prophylaxis which may be habitually adopted, judging from results secured by Marine and Kimball (8) with their periodical administration of sodium iodide to the goitrous children of the Akron Public Schools. Furthermore, Kimball visualizes the ultimate prevention of cretin, cretinoid and possibly even other glandular imbalances, saying: "The same imagination which de-

veloped the practical application of the principle of the prevention of goitre can now see a few generations hence the closing chapter of endemic goitre and cretinism in every civilized nation of the world." Is it too imaginative to extend these possible results beyond that of mere cretinism and endemic goitre?

Rogers (9) after fifteen years' observation and experiments at the Cornell Laboratories in New York city, recently reports that "All hyperthyroidism has been preceded by a longer or shorter stage of hypothyroidism." If hypothyroidism were recognized before undeniable symptoms were present and before pathological changes had taken place, is it not then logical to expect a resulting decrease in hyperthyroidism, with its classical symptoms and unsatisfactory response at times to any known treatment? Apparently in no way with our present laboratory technic can such a desideratum be attained except by keener clinical observation of the beginning subthyroid manifestations.

Judging from my clinical results during the past two years, it appears quite possible that children exhibiting various symptoms of general debility or nervous instability are receiving an insufficient amount of iodine bearing foods. Furthermore, there is no reason for concluding that this is a condition applying only to children. Constitutional inferiority may be in great measure uncorrected nutritional deficiency—emphatically so, if nutrition in utero is included. Rachitis, congenital and acquired, present many puzzling phases not the least of which is Howland's observation that "Oil from the codliver greatly facilitates calcium absorption." An illuminating angle of the problem may lie in the assimilable iodine percentage of codliver oil, and clinical tests with laboratory checks are now under way with minute doses of iodine substituted for this oil.

Apparently the triad of calcium, plus phosphorus, plus an efficient thyroid, are essential to normal bone development. Normal ossification rate but with rarified bone structure is at times observed clinically to accompany glandular imbalance. Bajon's experiments in Spain upon the rate of fracture repair in rats previously thyroidectomized, disclose such an interrelation (10). Further report of x ray and clinical findings will be made at a later date.

Ralph Pemberton (11) suggests that many forms of neurasthenic headache, migraine and most cases of neuritis, certain types of mental depression and melancholia, and possibly a few supposedly organic conditions are the result of interruption in a chain of metabolic processes. As is generally acknowledged he further says: "A part of the metabolic process is, broadly speaking, oxidative in nature."

Hence, if this hypothesis is tenable, not only is adjustment of the metabolic load indicated, namely, by consideration of diet, elimination, focal infection and rest, but also an increase in cell oxygenation is required. This cell oxygenation is a generally accepted function of the thyroid, and efficient thyroid function is a *sine qua non.*

McCarrison (12) ascribes the need of the thyroid for iodine to various factors, some of which possibly could be anticipated. Excess fats and animal protein, for example, increase the need, while there are further metabolic variations due to childhood, puberty, old age, activity, sex, pregnancy, menstruation, infection, climate and season. These frequently shifting demands upon the thyroid gland cause varying rates of functional activity and naturally make greater or less demand upon the thyroxin elaboration, as well as directly affecting others of the glands.

Possibly thyroxin deficiency resulting from a partially fed thyroid gland extending over a period of years, during which excessive demands were made upon glandular activity, may be ultimately revealed as a factor in the production of abnormal cell proliferation, generically grouped as cancer—particularly cancer originating upon the skin or from the epiblast. It occurs most frequently as follows:

1. In overweight individuals, i. e., those subthyroidizing, according to Duncan Bulkley (13) and Seelye Little (14).

2. In women, especially if living in cities where the nervous tension is increased and where normal physiological needs make possibly greater demands upon the thyroid. It is observed that the cancer rate in cities is higher in women and, according to Little, in both country and city the female rate is higher. One also recalls that Kimball reports that "Girls are six times as susceptible as boys to simple goitre." Hence the iodine reserve of the female is more quickly depleted than that of the male. This is a factor in maintaining resistance not to be ignored.

3. At the time of the menopause, when sexual glands become less active, or whenever glandular balance is disturbed.

4. Possibly in meat eaters, contrasted with vegetarians. This is hardly a fair indictment except as we analyze the effect of foreign proteins with their possible anaphylaxis. These foreign proteins call forth thyroid activity as do all infections. This is perhaps further emphasized by an apparent contradiction reported among the Eskimos, who are meat eaters, yet free from cancer. Their diet, however, of whale and codfish, includes the raw liver, glands and oil, peculiarly active as iodine bearing tissues, and insures the maximum protection possible under a flesh eating régime; this is further protected by a temperature unfavorable to protein putrefaction which lessens the reacting thyroid activity elicited by decomposed protein tissues.

Civilized man's custom of indulging chiefly in protein bearing meats lacking in the protective iodine elements of the Eskimo food, may account for the contention of Duncan Bulkley that "meat constitutes the precancerous diet," but does not prove that a carnivorous diet, if so liberal as regularly to include the halogen group, need constitute a precancerous diet more commonly than the vegetarian. Incompletely split proteins from animal tissue with insufficient iodine for oxidation, may be the dietetic error.

Bearing directly upon this hypothesis, recent investigations by Brown and Pearce of the Rockefeller Institute, show beyond reasonable doubt that apparently the activity of the thyroid—including the adrenals and the thymus—determines the resistance of the individual to the development of neoplasms. Furthermore, in rats experimented upon, where recovery ensued from tumor inoculation and particularly when immunity developed, the activity of these same glands was found to be greater than normal and their evident increased size was retained indefinitely.

(*To be continued*)

Historical Medicine

The Medical Wisdom of O. Henry

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INTRODUCTION

O. Henry's father and grandfather were doctors before him, and he, serving an apprenticeship of five years behind the drug counter, was evidently intended for a pharmacist, first cousin to physician. A hacking cough, early developed, sent him off to Texas, and subsequently he became enamored of the wanderlust. Later, as chief diagnostician to the four million and more, he left behind a list of case records, some two hundred and sixty in all, that are unsurpassed to this day.

It was inevitable that his protean pen should touch on the ways of the "disciples of S. Q. Lapius." As he used the cosmos for copy, so did he at times realize the rich veins that lie ever waiting exploitation in the field of medicine.

The following eleven stories are abstracted with a two-fold purpose. The first is to stimulate a direct interest in the original tales, which naturally lose charm and force in the retelling; and the second is to present in a compact form apt and striking gems of medical wit and wisdom gleaned from his thirteen enduring volumes.

LET ME FEEL YOUR PULSE.

(Sixes and Sevens)

The adventures are herein related of one who "came under the spell of the unquiet Lady Neurasthenia." It starts with his examination by a doctor, which for sheer humor is unequalled save by a catalogue of his repast at the sanitarium he first enters: "Phosphoglycerate of lime hash, dogbread, bromoseltzer pancakes, and nux vomica tea."

Fleeing from there because they advocate "absolute rest and exercise," he encounters the consulting physician, who is different from all others, since his uncertainty as to whether he is to be paid or not "insures you either the most careful or the most careless attention."

"No glanders in our family," he volunteers, when requested to trot around the room like a horse for a few minutes. He then proceeds to tie the prescription around his neck because his superstition (all of us have one) runs "to a confidence in amulets."

Of course there is nothing the matter with him, but he is nevertheless extremely ill. He visits a relative in the mountains and after a week grows frightened as he is "sleeping and eating well, and actually beginning to enjoy life." So he visits another doctor, and the "reëstablishing in his mind of the fact that he was hopelessly ill gives him so much satisfaction that he almost becomes gloomy again." For "there is nothing more alarming to a neurasthenic," he admits, "than to feel himself growing well and cheerful."

An old retired country doctor finally tells him that his only salvation is a certain flowering plant, powerfully scarce though it is, and hard to find. "The city doctors," he says, "may know a lot about new scientific things, but they don't know much about the cures that nature carries in her saddlebags." After they both spend a month in the quest of this "cureall plant," he is discharged as recovered into the hands of Amaryllis, girl of his choice, "the name of a genus of flowering plants, and also the name of a country girl in Theocritus and Virgil."

"The formula was true," the old doctor shrewdly said, "even though gropingly at times, the physicians of the walled cities have put their fingers upon the specific medicament."

THE LAST LEAF.

(The Trimmed Lamp.)

"Johnsy," lying in bed with pneumonia, wistfully watches the leaves drop, one by one, from an old gnarled ivy vine on the blank side of a wall visible through the window. The doctor tells her roommate that if she makes up her mind to live, she can bridge the crisis. Despondent and discouraged, she decides to die—when the last leaf falls.

Just before darkness there are four left. In the morning one remains. It holds out vigorously all the day—despite a bitter windstorm. At eventide "Johnsy's" spirit becomes less pessimistic, and she determines to try to get well. The tenacious clinging of the last leaf has taught her the folly of resignation.

She had no way of knowing at that time that Behrman, an artist broken through drink, had painted a leaf on the wall during the night. It was at last the masterpiece he had all his life been striving for, but the undue exposure of the stormy night gave him a pneumonia which terminated his career.

O. Henry reveals the mainspring of therapeutics —the will to get well. "I will do all that science, as far as it may filter through my efforts, can accomplish," says the doctor, "but the way people have of lining up on the side of the undertaker makes the entire pharmacopeia look silly. Whenever my patient begins to count the carriages in her funeral procession I subtract 50 per cent. from the curative power of medicine."

A RAMBLE IN APHASIA.

(Strictly Business)

Bellford was cautioned by his physician against the perils of overwork. "Either your nerves or your brain will give way," he was told. Mention was also made of the increasing frequency, in men of his type, of attacks of sudden lapses of memory.

But busy lawyer that he was, he took heed as busy men do; and one day found himself registered at a New York hotel as Edward Pinkhammer, delegate to the Druggists' National Convention. Forgotten were his home ties, his professional ties, his

Thursday night games of cribbage with his wife, his law books that were his chief recreation. His old fetters stricken from his hands and feet, he discovered anew the glittering Broadway—the street that grows on one "like an opium habit."

Forgotten, too, a sweetheart of his youth, whom he encountered by chance in a restaurant. Forgotten, apparently, her charms, and the romance, and the white roses. Forgotten all, until located at last by a distracted wife and a stolid doctor, his mind came back "as suddenly as it went."

Doubted the sceptic: "Men know about aphasia, and they use it for an excuse." But "why should this man, prosperous, happily married and respected, choose suddenly to abandon everything?" Perhaps because once too routinely his wife flicked "the invisible strand of lint" from his lapel; perhaps because too level were the morning kisses, too inviting the voluminous law books.

Is it true that "the key to liberty is not in the hands of License, but Convention?"

NEXT TO READING MATTER.

(Roads of Destiny)

"Unless they are in the last stages of angina pectoris they are mine in ten minutes after I begin to talk," boasted Judson Tate, gentleman adventurer. He was, by his own admission, as ugly as "A New England Early Christian Scientist," but he stoutly maintained that "handsome is as handsome palavers."

"There are people who spend hours fixing their faces—rubbing in cold cream and massaging the muscles (always towards the eyes) and taking in the slack with tincture of benzoin and electrolyzing moles—to what end? Looking handsome. Oh, what a mistake! It's the larynx that the beauty doctors ought to work on. It's words more than warts, talk more than talcum, palaver more than powder, blarney more than bloom."

Judson knew, for despite his gargoylean features he wooed and won the ravishing Annabela because of his "true lover's eloquence to paint the beauties of his inamorata." Fergus, his rival, though a dead ringer for "Heer Mees," used his charms to no avail, for his protestations of love sounded like "a cheap phonographic reproduction of the ravings of a jelly-fish."

But one day Judson, kin perhaps to Cyrano de Bergerac, injudiciously caught a cold in his laryngeal regions, so that "instead of the usual vibrating words of love and compliment, there came forth a wheeze such as a baby with croup might emit." Annabela, woman that she was, promptly turned to the mute but glorious Fergus.

But not for long. Luckily, a halfbreed Indian druggist was able to restore the defunct vocal organs to their pristine harmony with a potent prescription, and the lady was retrieved, which explains why Judson now walks the street extolling to a hoarse and rasping world the virtues of "Tate's Compound Magic Chuchula Bronchial Lozenges."

How well O. Henry knew the secret of the proprietary quack: "I may as well add," he remarks, "that you can't buy the Chuchula plant in the drug store."

THE DOOR OF UNREST

(Sixes and Sevens)

"There might have been employment here for the alienist or for those who circulate the pledge," when Micob Ader, "wandering Jew that niver was a Jew" related to the new editor how he was condemned to live until the Day of Judgment because he "would not let the poor Christ rest upon the steps."

Actually both were concerned, for once a month, Mike O'Bader, village shoemaker, developed a "rigmarole somethin' about his bein' a Jew pedler." Whiskey was not the cause of, but the recourse from, his periodic hallucination. An errant daughter, whom he had refused to shelter from a crowd that was stoning her out of town a number of years previous, had been found the next day at the bottom of a pond. The parallel that Mike drew was a compensatory atonement for the relief of his harassed mind.

JEFF PETERS AS A PERSONAL MAGNET.

(The Gentle Grafter.)

He was not "a regular preordained disciple of S. Q. Lapius," but he nevertheless could diagnose a street crowd as requiring "a compound hypothetical pneumo-cardiac antiscorbutic tonic," which he himself concocted over the sink with "two dollars' worth of cinchona and a dime's worth of aniline," for each half gross of eight ounce bottles. In selected cases, however, such as the "bad attack of superinflammation of the right clavicle of the harpsicord" the Mayor of Fisher Hill fell victim to, he advocated "a higher power yet, although drugs are high enough." This power he called personal magnetism, "the triumph of mind over sarsaparilla," and it operated by urging that there is "no pain and sickness except what is produced when you ain't feeling well."

He cured the Mayor by making him believe "he could feel the pain he didn't have, leaving," and unblushingly collected a fee of two hundred and fifty dollars. But Jeff, promenading "unillegitimately" as Dr. Waugh-hoo, famous Indian medicine man, was then promptly apprehended by a detective who told the Mayor he was in the employ of the State Medical Society to round up impostors. The Mayor only pretended he was ill to frame Jeff. So Jeff and the detective walked off together, and divided the two-fifty between them, for they were pals in arms to put one over on the Mayor, which they sklilfully did thanks to "the great doctrine of psychicfinanciering." Jeff had a succinct philosophy on the profession of "gentle grafting." He peddled medicine on the street to the poor, but would not practice personal magnetism on them. "I do not drag it in the dust," he explained, "because they haven't got the dust."

AT ARMS WITH MORPHEUS.

(Sixes and Sevens.)

Tom Hopkins, feeling blue and shivery, "mistook the morphine bottle for the quinine, and in about eight minutes sank back into a gentle collapse." His host sent for a doctor who gave him "citrate of caffeine in frequent doses and strong coffee," and

ordered him walked up and down the floor so that he might be kept awake.

The somnolent power of the drug was overwhelming, and it was imperative that, since his body could not be aroused, his mind should be kept alert. It occurred to his friend that the most efficient way of stimulating his thoughts was to invoke his anger. Creating therefore what he believed to be a fictitious situation, he scornfully accused Tom of behaving like a scoundrel and a cad in casting aside his sweetheart at home now that he had attained wealth and position in the city.

The ruse worked. Tom, becoming hostile and resentful, was sufficiently aggravated by the accusation to tide over the hour of imminent lethargy. The situation, far from being unreal, however, actually existed. The next day, his senses cleared, Tom felt the sting of conscience and sent for his neglected girl. Anger has its uses—regardless of the after effects.

THE MARIONETTES.

(Rolling Stones.)

It is difficult to conceive of "medicine—and burglary wedded"! Charles Spencer James, M.D., was just as apt in treating fractures as in fracturing safes; whether on the "case" or the "job" he maintained a strict business attitude. In fact, such was his "manner of poise, of sureness, of ability to overcome fate" that "at his first professional visit, women would tell him where they hid their diamonds at night from the burglars."

Late one evening while returning from a "job" with his "immaculate medicine case" that served as "a voucher for his honesty of person and purpose," and which actually contained a set of tools used by the up to date safeblower, he was summoned by chance to the bedside of a dying man. Putting his ear to the heart to verify his diagnosis of mitral insufficiency, he caught the whispered words: "Tell her—the twenty thousand dollars—her money."

The doctor—or the burglar? For a moment the two clashed—then decided to harmonize. If the secret could be extracted from the lips of the dying man. . . . But there was no time to lose. "The pulse under his fingers was as fine and small as a silk thread." Unhesitatingly he took from his bag a four-ounce vial of nitroglycerine, half of which had two hours earlier been injected into a hole drilled in the lock of a safe. Diluting it "one drop with nearly half a tumbler of water" he now had a solution of glonoin, the most powerful heart stimulant known to medical science," one fiftieth of a minim of which he was to use "to shiver the prime machinery of a human being."

For he knew that "over stimulation in this form of heart disease meant death," inasmuch as "when the clogged arteries should suffer congestion from the increased flow of blood pumped into them by the power of the burglar's 'oil,' they would rapidly become 'no thoroughfare,' and the fountain of life would cease to flow." A few minutes after injecting the solution "into the muscles of the region over the heart," the pulse began "beating in great throbs, with ominous intervals between."

Temporarily arousing his victim's brain cells, he learned to his dismay no revelation of secreted wealth, but the story of the squandering of a wife's fortune at the racetrack by a reckless spendthrift.

The doctor was a bit too anxious. A glimmer of understanding came to the dying man ere his heart failed him utterly. "Doctor and safeblower," he muttered. "Do you—make—the—combination—pay?"

HYGEIA AT THE SOLITO.

(Heart of the West.)

Cricket McGuire, expugilist and allround sport, was stranded in San Antonio after losing his pile in a bout across the river. "A nickel and gallopin' consumption" were his residuals; "a croaker" had given him six months to live.

Raidler, of the broadhearted breed of ranchmen, saw him "torn by a spasm of that hollow, racking cough," and from sheer compassion took him home to the Solito, where "the air was wine and seltzer." But Cricket, chronic grunter, scorned the gifts of Nature, and whiled away the precious days in "a vilely close room," smoking himself to death in the chair of indolence.

Inevitably he was taken for a malingerer, since his physical appearance was inconsistent with the advanced stage of the disease. The doctor, coming to the ranch on a chance visit, examined the wrong man, and reported erroneously that Cricket had the "lungs of a burro and the constitution of a steer."

So they thrust him out with the cowpunchers as punishment for his pretensions. But goaded into vigorous anger at being stigmatized as an impostor, he hurled himself to work with a vengeance, and a "hem'ridge" was the consequence. Ever ready to forgive, his remorseful associates nursed him back to health and vigor by feeding him "chopped raw meat and whiskey" and keeping him close to the ground, "where the medicine in the air stays."

There is no intention here to introduce a new therapy. But had Cricket not been thrust out of his indifferent submission to fate and cast into an environment where his recovery was a matter of vindication, he might never again have been able to demonstrate his famous "shore perplexus punch."

MAKES THE WHOLE WORLD KIN.

(Sixes and Sevens.)

This is a tale of kindred souls—sufferers from inflammatory rheumatism. A burglar, ordering a man in bed to throw up his hands is told it cannot be done because of an affliction of the shoulder. For years himself a martyr to rheumatism, the burglar develops a fraternal feeling for his victim, confessing that he himself was compelled to renounce secondstory work because he frequently would get stuck halfway up with a deadly twinge.

The two then begin to swap stories of remedies tried—and found wanting. They mutually condemn rattlesnake oil, Pott's Pain Pulverizer, Blickerstaff's Blood Builder, and opodeldoc, which latter they agree is a "salve suitable for little Minnie when the kittie scratches her finger."

Both are dead certain, however, of the efficiency of "a little old sanitary, lest we forget Booze," and arm in arm the erstwhile burglar and the quondam victim march off to re-affirm its reliability. It was the little touch of rheumatism that saved the day.

A FOG IN SANTONE.

(Rolling Stones.)

"There are some whom, when the terrible god Phthisis wishes to destroy he first makes beautiful." Such was Goodall, hibernating in Santone with the Three Thousand other "wooers of the ozone." But the town, which had the "purest atmosphere, sir, on earth," was one day unprecedently smitten with a cold gray fog, and "the tubercles, whose ravages hope holds in check, multiplied." As a consequence "on the red stream of Hemorrhagia a few souls drifted away"; others, having reached the tether of despair, used "whatever came handy to their relief, pistol, gas or the beneficent muriate."

Goodall elected morphine. Thirty-six grains had he succeeded in purchasing. On the verge of using them, he was sidetracked temporarily by a "seeker after Nepenthe," whose doctor had given him four weeks and who had been "vaccinated with whiskey and codliver oil." Together they sought consolation in the bottle. But to no avail; it only made him "disremember to forget."

Later in the evening found him in a restaurant, unburdening his soul to a woman of "Evelike comeliness." Her he told how he journeyed South for the climate "to escape the hereditary foe of his family"; how according to a specialist his calendar contained but a few more leaves; how in anguish at his failure to get better he had stocked up on morphine. The woman, mother-confessor and consoler, pleaded the cause of hope. "A tonic day," she inspired, "will dawn sweet and prosperous."

Goodall left her buoyantly, with renewed spirit. And the woman herself? We are not told just why she poured the morphine he left behind into her beer and casually drank it down.

Contributors to the Science of Medicine

JOHN WESLEY, JEAN PAUL MARAT, JAMES GRAHAM

W. J. Turrell (*Annals of Medical History*, December, 1921) states that it would be difficult to find three men differing more widely in character and temperament than the "eminent divine and credulous enthusiast . . . the revolutionist and scientist . . . and the fanatical quack." Wesley lived from 1703 to 1791. He did not begin practising medicine until he was forty-three, when he opened a dispensary at the Foundery, Moorfields, London. He took this step in an attempt to remedy the condition of the poor whom he encountered in his preaching. "I will prepare and give them physic myself," he decided. In spite of opposition on the part of the medical profession, the dispensary seems to have been a success, for he opened another at Bristol within two months. In the following year, he published his first medical work, *Primitive Physic*, or an *Easy and Natural Method of Curing Most Diseases*. This book attacked the qualified physicians of the time, and was of course severely criticized. But its success among the poor was so great that it reached twenty-three editions during Wesley's lifetime. In 1758 he published *Advices with Respect to Health, Extracted from a Late Author*. The late author was Doctor Tissot. This book is especially interesting as containing the first reference to electrical treatment to be found in any of Wesley's works. He made the claim that "electrifying" cures all kinds of sprains. Nearly twenty years later he brought out anonymously his remarkable work, *The Desideratum*, or *Electricity Made Plain and Useful; by a Lover of Mankind and Common Sense*.

Probably Wesley got his first information about electrical treatment from the works of Richard Lovett, a lay clerk at Worcester Cathedral. Lovett recommended treating many diseases in this way, among them, St. Anthony's Fire, bronchocele, epilepsy, gout, headache, palsy, rheumatism, sciatica, sore throat, and fistula lachrymalis. His treatment of hysteria and similar ailments seems to have been most thorough. Wesley in *The Desideratum* follows closely Lovett's practice. "The most remarkable feature of his own book is the fervor with which he appeals for a trial of the curative effects of electricity."

The instruments available for electrotherapy at that time were the frictional machine for the generation of static electricity, and the Leyden jar, discovered by Von Kleist, dean of Camin Cathedral. Three methods were apparently in use: 1, Sitting on the electrical stool or resin, corresponding to the present method of static charge or bath; 2, drawing off sparks from a person so charged, the static sparks of today; applying sparks to a patient from a charged Leyden jar. The alleged cures making up most of Wesley's book are for the most part absurd and unreliable. Although both Lovett and Wesley were unqualified practitioners, their genuine belief in the curative properties of electricity and their enthusiasm did a great deal for the early development of the science, of which they were the first English practitioners. Priestly, in his valuable *History of Electricity*, recognizes this fact. He writes: "If in such unskilful hands it produced so much good, and so little harm, how much more good, and how much less harm would it possibly have produced in more skilful hands?"

Jean Paul Marat, scientist, revolutionist, oculist, pulmonary specialist and electrotherapist, lived from 1743 to 1793. He spent ten years in London practising. He wrote a friend that he came to London to educate himself in science and to avoid the dangers of dissipation. In 1775 he was admitted to the degree of M.D. St. Andrews. His first work on the subject in question was a pamphlet, *Discov-*

eries on Electricity. In 1784, his book, *Mémoires sur l'Electricité Médicale,* appeared. In this he repudiated many of the absurd and extravagant claims of his predecessors and contemporaries. He claimed to show definitely in what diseases electricity is of value, determined the method of its administration, and defined the efficacy of its actions, and, to some extent, he justified his claims, for his work was certainly on far more scientific lines than the writings of his predecessors, or even of many of his successors. He considered electrical treatment justified in cases of external indolent tumor, edematous engorgement of the limbs, cutaneous eruptions, paralysis, hemiplegia, rheumatism, sciatica, and painters', enamellers', and founders' colic. He insisted upon fixing definitely the duration of treatment, that there must be fixed doses of electricity as well as of other medicines. A séance should last twenty minutes or more, and should be repeated three or four times a day. Strong shocks are prohibited. Weak shocks should be used at first and gradually increased in strength. All of Marat's writings reveal an overwhelming selfconceit, and the obsession that everyone was against him—characteristics, combined with his unusual ability, that led to the development of the extreme, revengeful and bloodthirsty revolutionist he afterwards became.

James Graham (1745-1794), of Edinburgh, is perhaps not so well known as Wesley and Marat. He "affords a striking example of an electrical quack, a class which still flourishes in this country, tolerated by an indifferent or indulgent government, and largely patronized by a gullible public." He was the son of a saddler of Edinburgh, and is said to have studied medicine at the university, but it is doubtful whether he ever took a degree. He practised as an aurist and oculist in America, and may have acquired some knowledge of electricity from the works of Benjamin Franklin, but it is certain that he imbibed none of his quackery in this way, for Franklin was most skeptical as to the advantages of electrotherapeutics, as his writings show. Graham soon returned to England and practised electrical treatment at Bath, Bristol, and London. One of his patients was the Duchess of Devonshire, and her patronage proved a stepping stone to fame and fortune, for he soon established himself at the Temple of Health, Adelphi House, London. His establishment was fitted up with the most ornate and elaborate electrical equipment, including an electrical throne, insulated upon glass pillars. He asserted that he spent ten thousand pounds on the installation. Even this did not satisfy his ambitions, for he soon opened the Temple of Health and Hymen at Schomberg House, Pall Mall. Here he won most of his fame by becoming associated with the notorious Emma Lyon, afterwards Lady Hamilton, the companion of Nelson. Graham is supposed to have used "frail Emma" as the Goddess of Beauty and as a model for his lectures on health. Horace Walpole wrote in his Letters that Graham had "the most impudent puppet show I ever saw, and the mountebank himself the dullest of his profession, except that he makes the spectators pay a crown apiece." Southey calls him "half enthusiast, half knave."

Graham's method of treatment consisted of placing patients in baths or on the "magnetic" throne; his specialty was the treatment of sterility, the cure being effected through sleeping in the "celestial bed" at fifty pounds a treatment. He was an early exponent of the virtue of mud baths, sometimes burying himself for hours at a time in the earth. He decried the eating of flesh and alcoholic excess, and advocated cold baths, ventilation, and sleeping on hard mattresses. He claimed that all diseases were caused by wearing too many clothes. Towards the end of his career he suffered from religious mania and had to be confined to his home.

It is no wonder that the science of electrotherapeutics, sponsored by such godparents, passed throughout a troubled and neglected childhood.

Two other names stand out prominently in the development of electrical treatment because of their valuable contributions to the science—Duchenne of Boulogne, famous in neuropathology, and Dr. Golding Bird, who established an electrical department in Guy's Hospital, and in 1847 gave a course of lectures before the Royal College of Physicians on electricity and galvanism in relation to physiology and therapeutics.

PRESERVATION OF THE LISTER WARD.

During the past several months, the question has come up in Great Britain of the destruction, for various published reasons, of the famous ward in the Royal Infirmary of Glasgow where Lister worked out the principles of antisepsis. This proposed step has raised a storm of protest, not only from many members of the medical profession, but also from men and women who believe that the ward should be retained for historical and civic reasons as a monument to a man who knew neither class nor creed, but adopted humanity itself as a field for his work. Other nations have done honor to Lister in their public monuments, as, for instance, France, who, during the Pasteur centenary celebration, unveiled a marble panel in the Sorbonne commemorating the spot where Pasteur and Lister once embraced.

Pasteur and Lister have been called the fathers of modern surgery, the former because he developed and reduced the theory of microbes into a science, and the latter because he applied the theory to practical ends. Lister was the child of Quaker parents and retained throughout his lifetime much of that simple faith and its fruit, the love of mankind. The controversy over the Glasgow ward brings to mind the occasion when Lister's discoveries first excited popular interest. This was when Sir William Jenner, physician to Queen Victoria, sent for Lister for assistance in treating an alarming condition in the Queen contigent upon an abscess. Making use of his newly discovered methods preventive of blood poisoning, Lister performed a successful operation. However, although there was immediate relief, pain and fever recurred. Lister came to the conclusion that these were due to insufficient drainage of the abscess, and so strong was his faith in his antiseptic principles that he made his first experiment upon a queen—and with success. From that time on his fame was assured.

Editorial Articles

THE THERAPEUTIC VIRTUES OF BRIMSTONE AND TREACLE

Mr. Wackford Squeers, the Yorkshire schoolmaster in *Nicholas Nickleby* and one of Dickens's immortal characters, has undergone recently somewhat of a whitewashing at the hands of one of the most celebrated of British surgeons. Sir Arbuthnot Lane, speaking at the annual meeting of the Invalid Children's Aid Association, declared that Mr. Squeers, whom Dickens stigmatized as the type of the cruel, ignorant and mean schoolmaster who infested certain districts of England at the time in which he wrote, was so far as the early morning diet of the scholars was concerned a benefactor to the youths under his charge. Sir Arbuthnot Lane pointed out that probably the greatly pitied pupils of Dotheboys Hall really owed long and happy lives to their morning dose of brimstone and treacle, both of which are ideal foods and beneficial to health in a high degree.

No doubt the London surgeon intended to drive home the point that the sophisticated and largely artificial diet of civilization is not conducive to good digestion and good health. He drew attention to the fact that coarse treacle is a better food than highly refined white sugar and that whole meal bread is more nutritious and beneficial to health than white bread made from closely milled flour. Sophisticated food in any form from which the vitamins have been wholly or partially removed is not so invigorating as the more primitive foods in which the vitamins have been left. The reason for this is ridiculously simple, because vitamins are essential to good health. Again the coarse foods are better not only because they contain the vitamins and certain necessary salts, but for the reasons that they provide masticating exercise for the jaws and teeth, keeping the teeth in good condition and they also, because of their coarseness and roughness, encourage peristalsis and are means of overcoming constipation, one of the greatest banes of civilized life.

The soft pappy food and candy and other sweets which are consumed in such large quantities nowadays are fruitful causes of constipation and of bad teeth. Therefore it is true to some extent that the Spartan diet prescribed by Mr. Wackford Squeers and his even more formidable Amazonian helpmeet was beneficial to the health and good for the complexion. Mr. Squeers, although Dickens did not intend that his writing should be so interpreted, was, in fact, cruel only to be kind, as it is undoubtedly true that a luxurious diet, the diet of present day prosperous civilization, is not nearly so valuable physically and mentally as the simple coarse diet of a primitive people. Moreover, many chronic diseases can be long kept at bay by careful attention to food and habits of life.

THE CLINICAL VALUE OF BASAL METABOLISM.

The estimate of the basal metabolism, that is to say, the minimum amount of heat produced by the organism in repose, fasting and in a normal temperature, calculated by square metres of cutaneous surface and by the hour, is a procedure which of late has passed from the laboratory to current clinical practice. Although the technic is not so simple or rapid as taking the temperature or blood pressure, one can, nevertheless, utilize this method for the diagnosis of certain pathological states in which it will give very important data. With Boothby, the following divisions may be accepted; diseases with a normal basal metabolism (-10 and $+10 \times 100$); diseases with a high basal metabolism (below -10×100).

But Maranon and Carrasco, who have studied this subject very carefully, say that as yet one must not make the conception of metabolic rapidity a conception of general pathology. It is to be confined to the pathology of the organs of internal secretion, especially the thyroid. This opinion bears weight as it is based on 177 cases.

In hyperthyroidism the metabolic rapidity is always increased so that any high metabolic figure should cause one to think of the various forms of this affection. The degree of hypermetabolism will indicate the intensity of thyroid hyperfunction, but it does not quite indicate the gravity of the disease which also depends upon other factors. The prognostic value of metabolic data is therefore relative.

The estimate of basal metabolism is of great value for the differential diagnosis between the atypical forms of hyperthyroidism and the complex disturbances met with in certain subjects—neuropathic, neurasthenic, or hysterical—with manifestations, principally vegetative, such as tachycardia, palpitations, subjective cardiac sensations, distress, tremor, and violent vasomotor reactions. However, in some of these clinically doubtful states, metabolism gives doubtful results.

Hypothyroidism gives a low basal metabolism so intense, in fact, that a low figure always indicates thyroid insufficiency, even when the clinical symptoms of hypothyroidism are doubtful.

The genital glands act on metabolism in the same way as the thyroid and for this reason in pure cases of genital insufficiency — especially ovarian — the metabolic rapidity is decreased. When ovarian insufficiency is combined with thyroid insufficiency, the hypermetabolic action of hyperthyroidism predominates; hence the estimate of the metabolism is not of much use for the diagnosis of genital changes.

The hypophysis acts like the thyroid, hence in acromegalia, the metabolic figure is rather high, sometimes very high. If this affection is, as is frequently the case, combined with thyroid insufficiency, the hypometabolic action of the latter predominates. In the sure or doubtful clinical types of pituitary insufficiency, Frölich's syndrome, infantile adiposis, pituitary cachexia and prepuberal pseudohemaphroidism, the metabolism is rather low. In obesity, the basal metabolism depends upon the hypoglandular disturbances so frequent and important in its pathogenesis, hence its estimate is important for controlling thyroid medication.

Although Maranon and Carrasco have never noted hypometabolism in Addison's disease, they suspect that the suprarenal gland exercises a rapid and energetic, although fleeting, action on metabolic rapidity, but as yet no diagnostic value can be attributed to it in affections of the suprarenals. The basal metabolism and its pathological variations depend upon the internal secretions and its estimate offers an excellent method for diagnosis and control of treatment.

DISEASES OF ANIMALS

It has recently become evident that in the study of human diseases that of the diseases of animals may be extremely useful. Comparative pathology may aid greatly in throwing light on points that have long puzzled medical investigators. Animals are subject to many of the diseases to which men are subject and, in short, investigations in this direction open up a wide field and should yield valuable results. Little has been done hitherto along these lines even in the case of domestic animals. At a meeting of the Section of Comparative Medicine held in London on March 26th last, a discussion was held on the comparative pathology of captive animals and man. Dr. N. S. Lucas read a paper and pointed out that the subject was much wider than a comparison of such diseases as tuberculosis, glanders, anthrax in man and animals, or in the relation of smallpox or ordinary cowpox. The study of this comparative pathology had been poorly developed, because so far as he knew, the Zoological Gardens in New York and London were the only ones in which postmortem examinations on the animals which died were systematically carried out and the results recorded. The study was further hampered by the dearth of knowledge concerning wild animals in their normal state. Of course, it is obvious that captivity has a very considerable influence on the lives of animals, in some respects shortening life and in many instances lengthening it. Animals in the zoological gardens were free from many diseases which afflict mankind and even domestic animals resulting from work or the strain of overstimulated reproduction.

The speaker might have said that animals kept in captivity under scientific supervision did not suffer from the diseases of civilization largely due to faulty diet, from which man suffered and from which domestic animals were likely to be afflicted to a less extent. But animals in captivity were prone to some diseases which did not attack human beings although, on the other hand, many human diseases were unknown in captive animals. Acute specifics, including syphilis and gonorrhea, were absent. Acute rheumatism and endocarditis were very rarely met with, although he had seen a severe case in a monkey.

As for malignant disease, which is increasing so rapidly among civilized people that many are now classing it as a disease of civilization, Dr. Lucas said it was moderately rare in these animals, but not because the animals were too young for that disease to manifest itself. Carcinoma of the thyroid was fairly frequent in dogs, and in the zoological gardens, wolves, jackals and wild dogs had been affected with it. Melanotic sarcoma of the suprarenal occurred in the antelope, and sarcoma of the palate had been detected in an ostrich, and when death eventually ensued there was a secondary growth in the intestine. There had been no case of sarcoma or carcinoma among the apes or monkeys for twenty years.

Professor G. H. Woolridge, a veterinarian, said that most of the cases of tuberculosis in the zoological gardens had been found to be due to the bovine strain of the bacillus. There was no doubt about the feeble resistance to lung conditions in these animals, and the bad results were aggravated by the fact that the patients had no power to communicate that they were ill until the disease was very far advanced. The comparative absence of malignant disease in wild animals in captivity was a matter for comment as many of the denizens of the zoological gardens had lived beyond the age at which domesticated animals developed cancer.

Mr. M. T. Rowlands said he had been informed that the pig was the only animal which could be infected with aviary tuberculosis and he thought therefore that the latter could also infect human beings. By giving his pigs runs in a wood and feeding them on foods with a vitamin A content he had abolished tuberculosis from one farm entirely. The study of comparative pathology is yet in its infancy and it will

be many years before it is placed on a firm basis. However, the ground is unexplored and it is probable that many discoveries will be made of great service to the human race. While there is little analogy between the conditions of life of domesticated animals and those in captivity in zoological gardens, certainly not sufficient to attempt to build theories, yet it is open to speculation whether the more or less civilized life of domestic animals and especially their diet has any bearing on the fairly common occurrence of cancer in domestic animals and its rarity among anivals in the London zoological gardens. Does civilized life account for the more or less frequent occurrence of cancer among domestic animals as it is claimed to account for the great and increasing prevalence of cancer among civilized beings in contradistinction to people living under primitive or simple conditions.

THE PARATHYROID GLANDS.

Careful investigations have unveiled a great many of the obscure points with respect to the endocrine glands and other as yet not understood features are in the process of being cleared up. But there remains much to be elucidated in connection with the physiology of these organs. The functions of the parathyroid glands, for instance, are by no means thoroughly understood, indeed little concerning their physiology is really known. Therefore any addition to our knowledge of the subject is welcome.

In the *Lancet,* March 31, 1923, is a brief review of some observations made on the parathyroid glands by Harald A. Salvesen, of the Physiological Institute of the University of Christiania, contributed to the *Proceedings of the Society for Experimental Biology and Medicine,* Vol. xx, No. 4, 1923. It is pointed out that of the many theories as to their functions, only three have gained importance, viz., that the parathyroids control, 1, the guanidine metabolism, and so regulate the tonus of muscles; 2, the calcium metabolism and 3, the acid base equilibrium, their removal causing alkalosis. They are also supposed to contain the sugar metabolism to some extent, a supposition which is held regarding the other ductless glands. Salvesen's experiments were made with dogs. After partial and complete parathyroidectomy had been performed he studied the changes in certain constituents of their blood, care being taken to leave enough thyroid tissue to prevent cachexia. The results of these experiments were to demonstrate that when there is a fall in the calcium content of the blood there is parathyroid insufficiency. In fact the most marked characteristic of this insufficiency is the fall of the blood calcium, which fall is in proportion to the amount of parathyroid tissue removed.

It has been suggested, previously, that a province, if not the province, of the parathyroid glands is to fix the calcium content of the body. The outcome of Salvesen's experiments tend to verify these suggestions. If, then, the parathyroids do control calcium metabolism, and so it certainly appears, they further influence the functions not only of the muscle and nerve tissue, but probably of all the organs. Accordingly the functions of the somewhat despised parathyroids, despised because they were not understood, seem to be of the first importance. And this raises the hope that a thorough knowledge of the ductless glands, and of the means to keep them in smooth working order, will perhaps revolutionize the practice of medicine.

First, the thyroid has been shown and now the parathyroids have been shown to be essential to the proper working of the human economy. Moreover, although each ductless gland has its peculiar function or functions, they are interdependent. Hurst, Vines and others investigating the same field have given clinical demonstration that the parathyroids influence the blood calcium and that the removal of the parathyroids lays the nervous system open to attack. Salvesen has experimentally confirmed these findings that with the removal of the parathyroids, the threshold for the excretion of calcium is lowered. While it is true, as Sajous has recently taken occasion to point out repeatedly, our exact knowledge of the physiology of the ductless glands is even now singularly limited, we are steadily but surely accumulating facts in this direction and in the course of time shall reach the goal. No road leading to health promises so much.

THE HEALTH ADMINISTRATOR AND THE CANCER PROBLEM

"A problem that has increasingly weighed upon my mind in recent years is the problem of what health departments ought to be doing about cancer," writes Dr. Eugene R. Kelley, State Commissioner of Health, Boston, in a significant article published in the July issue of the *American Journal of Public Health.* Dr. Kelley discusses the problem of cancer and the health administrator from many angles and in detail. He feels, in common with many other members of the medical profession, that this fast increasing disease is a huge public health problem, ranking perhaps with mental disease, and as a racial menace far outstripping tuberculosis, venereal disease, infant mortality, and industrial stress and strain. He urges that the American Public Health Association and other bodies and organizations

struggling with the cancer problem make an effort to formulate collectively a practical program of continent wide activity in this field on the part of health departments, and a campaign that will be of practical lifesaving value not disproportionate to the amount of attention and money necessary to the successful operation of this program. The main lines of attack should be, considering that cancer is not a purely medical but also a social and humanitarian problem: 1, studies and research on the etiology of cancer; 2, studies of facts relative to past prevalence and curability, with all possible statistical data arranged and tabulated to afford a basis for a comprehensive followup; 3, adequate provision for early differential diagnosis after the case is in the hands of the physician; 4, adequate hospitalization where it is needed, both in operable and nonoperable stages of the disease; 5, an effective educational campaign. Dr. Kelley believes that the facts on cancer are sufficiently menacing to call for the active cooperation of everyone "to fight this enemy of human existence to a finish and to enlist every bit of human experience and knowledge in the struggle instead of waiting in fatalistic indifference for someone, somehow, somewhere, sometime to solve the riddle and cage the monster."

DRUG ADDICTION

If one is working at a thing he will either see it calmly or in a highly exaggerated light, according as he is of a scientific or a sentimental mind. Possibly in the former mental state one may give the subject less consideration than it deserves, but he is more likely to be on the side of fact.

Kolb and Mez of the Public Health Service have just issued a report on the subject of the Prevalence and Trend of Drug Addiction in the United States, and at the same time the International Narcotic Education Association has been putting out special literature along the same line.

The former believe that "While it is impossible at the present time to make an exact count of the persons addicted to narcotics in the United States, in an individual State, or even in one of our larger cities, because of the social and legal factors tending to make addiction a secret practice," the public health servants believe "that it is possible, by utilizing all of the information now available, to delimit the number of certain maximum and minimum figures."

The data from six independent surveys, made in different parts of the country, are strikingly similar so that the estimates made from them for the entire country can hardly be far wrong. In summarizing their analysis of these statistics they say "The evidence seems to show that a maximum estimate for the number of addicts in the United States at the present time would be 150,000. The estimates based on actual counts and on the available supplies of narcotics, together with the conditions reported by the physicians interviewed, point to about 110,000, which number is believed to be nearly correct. The number of addicts has decreased steadily since 1900. Before this decrease set in there may have been 264,000 addicts in this country. The quantities of narcotics imported by this country at the present time are believed to be only slightly in excess of the amounts required to supply medical needs. While physicians have been credited with being responsible for the creation of many addicts in the past, it is concluded that but few cases of recent addiction can be so attributed."

On the other hand, The International Narcotic Educational Association believes that heroin addiction, especially by children, is growing by leaps and bounds. "Many authorities agree that the average addict is twenty-two years of age and that each new addict starts recruiting others." "It is the custom to give away heroin free to youth until he or she is hooked." They report "snow parties" and warn against "using any brand of face powder regularly unless it bears the name of a reputable maker or has been analyzed for the drug." "In the case of the average heroin addict, still in his minority, six doses produces an addict." "The great expansion of narcotic addiction in America dates from 1910. The expansion continues almost unchecked, in spite of legal restraint and efforts at salvage of victims." The association has made no survey of the situation.

We can take our choice between the report of the above investigations carried on in different sections of the country and by different agencies, and the statements of the International Association which is certainly greatly interested in the subject.

BETTER LATE THAN NEVER

"Seeing as how" we have come to have national prohibition, a cure for alcoholic intoxication comes rather late in the day. However, it may still be of not infrequent use. This cure is the unexpected outcome of work in physiology which was begun only a quarter of a century since, and which has probably resulted in more practical benefit than any other purely physiological research ever conducted.

Carbon dioxide has long been considered one of the most useless, if not poisonous, substances produced in the animal body, and we believe it was Professor Yandell Henderson who first pointed out that, if it was a deleterious thing, the body kept on hand an astonishingly large amount of it, since there is, at all times, twice as much in the blood as

there is of oxygen. While, like sugar, or salt or even water, it is evidently a poison when it accumulates in excess, there would seem to be some good use for the large amount kept in circulation. The hormone properties of the compound came into view, and, at one time, a likely theory of surgical shock grew out of this idea.

It has been known, of course, for some time that carbon dioxide is the delicate regulator of respiratory frequency and depth, acting thus to control nicely its amount in the blood. By preventing its normal escape from the lungs, as by increasing the amount in the inspired air, and thus partially damming it back in the blood, the respirations are increased in depth and frequency, Henderson happily hit upon this procedure for aiding nature in getting rid of carbon monoxide in poisoning from this gas. By supplying to the victim a mixture of oxygen and carbon dioxide, the oxygen, through the respiratory stimulation of the carbon dioxide, is much more rapidly taken up and the carbon monoxide replaced. From the curative viewpoint this is one of the most brilliant direct applications of physiology.

Following a suggestion of Henderson, Hunter and Mudd have applied this method of carbon dioxide inspiration for saving or sobering cases of alcoholic intoxication. The experiments along this line which they describe in the *Boston Medical and Surgical Journal* of June 5, 1924, have been carried out clinically as well as in the laboratory. In four cases of alcoholic coma there was rapid revival. None of the cases had, on the following day, the usual leftover symptoms—headache and nausea. The deeper the coma, the more marked the improvement.

It is suggested that in cases of methyl alcohol poisoning "carbon dioxide would be even more efficacious, as, due to its lower boiling point, it has a higher partial pressure than ethyl alcohol, both being at the same concentration."

Obituary.

ADELBERT A. GETMAN, M.D.

Dr. Adelbert A. Getman, a life long resident of the village of Chaumont, N. Y., and one of the oldest practicing physicians in northern New York state, died suddenly at his home on July 26th, from heart trouble. Dr. Getman was born in 1851, and attended the Albany Medical School, his internship being served at Park Hospital, New York. He became interested in the lore of the American Indian, and gathered together a large collection of relics and fossils. Parts of his collection were given to the New York Museum of the American Indian in New York, to the educational department at Albany, and to the Smithsonian Institute.

JOSEPH R. BROOME, M.D.

Dr. Joseph R. Broome, president of J. R. Broome and W. F. Brainard, Incorporated, publishers of medical books, died unexpectedly on July 12, 1924. Dr. Broome was born near Utica, N. Y., in 1867, and practiced medicine in Utica until 1900, when he became associated with D. Appleton and Company, as editor of their medical department. About a year ago Dr. Broome organized his own business for the publication of medical books.

HENRY MOELLER, M.D.

Dr. Henry Moeller, of New York, died at his home August 5th, at the age of eighty-two years. Dr. Moeller was born in Germany, coming to this country at the age of eighteen. He was graduated from the College of Physicians and Surgeons in 1871, and became connected with the Hospital for Ruptured and Crippled Children. He was considered an authority on kidney and heart diseases, and identified a robber who attacked him in his office, posing as a patient, through a peculiarity in his heart action. Dr. Moeller was physician to many prominent people, among them the Rockefellers. He rarely made house calls, insisting that his patients call on him, and await their turn in his office.

Letters to the Editor.

THEFT OF SURGICAL INSTRUMENT

New York, *August 1, 1924.*

To the Editor:

On July 14th a tall well-dressed, smooth-shaven man with brown hair and of good appearance, about thirty years of age, called at my office and said that he was with the Kny-Scheerer Company.

He said that he wished to use a Roy Paquelin cautery for his father and remembered that I had taken one to him for repairs. He gave the name of Thomas J. Tibbets and said that he would return the cautery on the following day. This he has not done and the Kny-Scheerer Company know nothing of him.

The platinum points of this old-fashioned cautery are now valuable. The man expressed an undoubted familiarity with the subject of cauteries and other surgical instruments.

Robert T. Morris, M.D.

News Items.

Industrial Hygiene.—The personnel of the recently appointed Advisory Committee on Industrial Hygiene of New York State is as follows: Dr. W. Gilman Thompson, chairman; Hon. Matthias Nicoll, Jr., Hon. Frank J. Monathan, Dr. Orrin Sage Wightman, Dr. Charles L. Dana, Dr. James Alexander Miller, Dr. George M. Price, Dr. Louis I. Dublin, Dr. Leland E. Cofer. The first number of the *Industrial Hygiene Bulletin,* published by the New York State Department of Labor, Bernard L. Shientag, Industrial Commissioner, was issued in July.

The Department of the Interior, through the Bureau of Mines, is making an investigation of health conditions in the oil fields.

Research in Vitamines.—Prof. Wilhelm Stepp, of the University of Giessen, is to spend six months in this country in the study of vitamines, at the invitation of the Rockefeller Foundation.

Quaker Relief Work.—The Executive Secretary of the American Friends Service Committee Wilbur K. Thomas, has gone to Europe, and in company with the head of the English Quaker Relief Society, will visit Austria, Germany, Russia, and Poland.

International Prize.—A prize of thirty-five hundred liras is to be awarded for the "best orthopedic work or invention." The contest is open to all physicians. Application should be made to the president of the Rizzoli Institute, Bologna, Italy, the closing date of the competition being December 31, 1924.

State Tuberculosis Death Rate Higher for 1923.—Provisional figures for 1923 indicate a decrease in the death rate from tuberculosis in New York City from 88.3 to 86 in 100,000; in the rest of the State an increase from 88.1 to 89.9. The number of cases reported was 2,141 less in New York City than in 1922, and 269 greater in the rest of the State.

Virginia Board of Health.—A new board of health, of seven instead of fourteen members, has been appointed for the state of Virginia. The following are the physicians chosen: Dr. Henry M. Miles, Norton; Dr. W. M. Smith, Berryville; Dr. Guy R. Harrison, Richmond; Dr. William T. Graham, Richmond; Dr. Lawrence Royster, University of Virginia, Charlottesville; Dr. John T. Daniels, Cape Charles. Dr. Miles is the only member continued from the former board.

State Hospital Statistics.—The State Hospital Commission recently reported to the Legislature that total disbursements of the department during the year 1923 were $14,386,000, a decrease of $1,660,000. Income from paying patients amount to $1,378, the largest sum ever collected in one year. Overcrowding certified capacity to the extent of 23.7 per cent. was found, but it is expected that the new construction provided in the recent bond issue will greatly improve this condition.

Child Labor in New York State.—According to statistical data form January 1, 1910, to December 31, 1920, which have been recently compiled by the State Department of Labor, there were at the close of that period 47,024 fourteen and fifteen year old children gainfully employed in the State of New York. This number represents 14 per cent. of all children of those ages in the State. In the first and second class cities the percentages of working children of this age group is as follows: New York, 18 per cent.; Rochester, 17; Buffalo, 15; Syracuse, 14; Albany, 11; Yonkers, 11 per cent. In 1923 the number of children found illegally employed was 3,561, of whom 1,023 were under 14 years of age. The proportion of girls entering clerical positions and of boys in manufacturing and clerical work has greatly increased during the ten years period.

New York State Appropriations.—The State Board of Estimate and Control has apportioned $12,402,500 for the construction of new buildings at State hospitals for the insane and other State institutions. This sum represents the first year's proceeds of the recent $50,000,000 bond issue. In detail, there was appropriated $1,930,000 to the Kings Park State Hospital, to complete buildings for ex-service men with mental disorders, giving a capacity of 1,000; $3,500,000 for the completion of the Creedmoor Division of the Brooklyn State Hospital; $2,570,000 for converting the former State prison at Wingdale into an institution for the insane; $60,000 for staff quarters at Manhattan State Hospital on Ward's Island; $1,000,000 for the enlargement of the Matteawan State Hospital for the Criminal Insane, the most seriously overcrowded of all State hospitals; $1,812,500 for the enlargement of Letchworth Village; and $295,000 for enlarging the State Hospital for Crippled Children at West Haverstraw. The balance of the funds will be expended in enlarging the Rome State School for Mental Defectives and the Craig Colony for Epileptics at Sonyea. The allotments follow closely the recommendations made by the Citizens' Committee on Protection of the State's Unfortunates, appointed by the State Charities Aid Association.

Hospital News.—The New York Hospital and St. Vincent's Hospital have purchased additional property.

The West Baltimore General Hospital, capacity one hundred and fifty beds, has been dedicated.

The Massachusetts General Hospital, Boston, is planning a $300,000 improvement and enlargement of the Bulfinch Building.

The Boston City Hospital is to be enlarged by a hundred bed maternity building, modeled after the Lying-In Hospital.

The Swedish Immanuel Deaconess Hospital, of Omaha, will erect a $200,000 addition.

The new Wilder Dispensary Building of St. Paul is now ready for occupancy. This is a four story brick and stone building, erected by the Amherst Wilder Charity.

Through an ordinance setting aside $4,000,000 of the next municipal loan of Philadelphia, it will become possible to raze the present buildings of the Philadelphia General Hospital and erect a new 2,100 bed hospital to replace it. It will also be possible to remove the 1,400 insane patients now at Blockely to the City Hospital for the Insane at Byberry.

The cornerstone has been laid of two hospitals of the Western-Reserve University-Lakeside Hospital group. These two buildings will cost $3,300,000, and will be finished in 1925.

A permanent recreation building at the Walter Reed Hospital is provided for by a Red Cross appropriation of $150,000.

The contract has been awarded for the new Sydenham Post-Graduate Hospital, at 123d Street and Hancock Place, New York, the cost being around a million and a quarter.

The cornerstone has been laid for the Somerset Hospital, Somerville, N. J., to be built at a cost of $400,000, and to serve Somerset and Hunterdon counties.

Both Bellevue and Fordham hospitals in New York are to have new nurses' homes.

Personals.—Dr. A. O. Oliver has sailed for Europe, to demonstrate American methods of correcting jaw defects in children, in clinics to be held in London, Amsterdam, and Paris.

Dr. Mark Hornstein has been appointed attending obstetrician at the Jewish Memorial Hospital.

Dr. James W. Smith has been appointed attending ophthalmologist at the New York City Hospital.

Dr. Charles B. P. Kelly of Jersey City, president of the Hudson County Medical Society, has been appointed a member of the state board of medical examiners.

Dr. Anna Koslow and Dr. Pauline Seller, graduates of the University and Bellevue Hospital Meeifal College, have received appointments as interns at the Bronx Hospital,—the first women to serve at that hospital.

Dr. John A. Foote, of Washington, who is professor of diseases of children at Georgetown University School of Medicine, has been elected a member of the board of trustees of the National Geographic Society.

Dr. Samuel T. Darling, of Baltimore, who is a member of the International Health Board, at present engaged in field studies of malaria control in Georgia, has been elected president of the American Society of Tropical Medicine.

Dr. Harvey F. Smith, of Harrisburg, Pennsylvania, has been awarded the honorary degree of doctor of science by Bucknell University.

Dr. Obadiah H. Sproul, of Flemington, Pennsylvania, a graduate of the University of Pennsylvania Medical School in 1866, recently celebrated his eightieth birthday. Doctor Sproul is a former president of the state medical society.

Dr. Eliza M. Mosher is chairman of the Cleaner Brooklyn Committee, planned to enforce the law regarding cleanness in the public parks.

Dr. Frederick E. Sondern, of New York, has been elected vice-president of the American Society of Clinical Pathologists.

Dr. Florence R. Sabin, professor of histology at Johns Hopkins Medical School, has been appointed a member of the scientific staff of the Rockefeller Institute.

Dr. Descum C. McKenney was elected president of the Alumni Association of the University of Buffalo.

Foreign Correspondence

VIENNA LETTER

(From our own correspondent)

VIENNA, *July 1, 1924.*

PROFESSOR HOCHENEGG'S CHARGES AGAINST THE SURGEONS OF VIENNA

The medical profession and public opinion as well have been greatly agitated by an uncommon event. Professor Hochenegg, director of the second surgical clinic of the University of Vienna, stated in a lecture to his students that certain doctors were circulating unfounded calumnies about him, saying that he was not modern enough, that his weakened sight prevented him from performing successful operations, that he was too conservative in his thinking, and owing to this that he failed to adopt up to date methods. Professor Hochenegg said that the reason for this was that he was one of those old fashioned behind the times men, who could not descend to sharing the fees received from patients for operations performed with the family doctor who sent the patient to him. His feeling of dignity protested against dichotomy. Besides this Hochenegg stated that at present in Vienna family doctors patronized always those surgeons from whom they get their regular commission for the cases submitted. He even went so far as to state that there were doctors who were capable of sending patients to surgeons when operations were not indicated, simply to make money.

It is but natural that the whole medical profession is upset and embarrassed at the statements of Hochenegg, which were rendered still more serious by the fact that the statements were told publicly and therefore widely circulated in the lay press with sharp criticisms. Some newspapers demanded a thorough investigation of the cases in which patients were operated upon without due indication, and the culprits punished.

The physicians of Vienna have held several conferences and resolved that Professor Hochenegg shall prove the correctness of his statements with substantial evidence. The leading daily papers have interviewed the most distingusihed medical men in Vienna on this topic; all of them gave their views on the subject, condemning Hochenegg for accusing a whole staff without mentioning singly those whom he knew were vicious, thus giving a broad field to conjecture. The most prudent and sincere opinion was that of a famous Vienna surgeon, who did not reveal his identity. He said: "The Vienna doctors are complaining of their practice making retrograde steps. The cause of this, in the first place, is that in latter years a great many new doctors have settled in Vienna. At present there are about 4,500 medical men living in Vienna, among them many university professors, lecturers, and specialists. It is not to be wondered at, therefore, if the ratio of patients and doctors is very small. Also the number of patients has decreased, not only on account of improvement in hygienic conditions, but also because of the impoverishing of the population, doctors are not consulted in every case. The number of foreigners coming to the Austrian capital to consult doctors has also considerably decreased. The reason of this is easily found in the fact that Vienna is at present one of the most expensive cities of the world.

The doctors of Vienna are very desirous that this serious accusation of Hochenegg should be cleared away; the medical profession feels the weight of this accusation, and fears are entertained that Vienna, once recognized as the centre of medical science and art, should suffer in its reputation. It is generally demanded that light be thrown, as quickly as possible, upon this dark blot on the character of Vienna medical men. At present the case is in the able hands of the Vienna Medical Chamber, the only competent forum to investigate the matter.

The object lesson of this whole affair is that in the Vienna University for the past decade war has been waged between two medical parties. One party is of the opinion that every old medical professor, if he is provedly of Aryan descent, is entitled to leave his chair to his son or nephew as an inheritance; the other party would like to see in the professorial chairs of the university the fittest men, even if they happen to be of unsettled religion. The battle of the clericals and freemasons is carried on in the university, and in this fight the weapons are changing from time to time. Such a weapon is the discovery that Hochenegg (of pure Aryan pedigree) could produce little proof beside his accusation; he simply stated the fact that the clientele of certain medical professors was strikingly large.

LATIN AMERICA LETTER

(From our own correspondent)

CANAL ZONE, *July 1, 1924.*

EXTENSION OF THE JURISDICTION OF THE UNITED STATES

One of the problems which faces the authorities of the Panama Canal who have an interest in the future operations of this great international waterway, is the way in which enough water may always be available for lockages. During the wet season there is enough and to spare, in fact at that time there has to be under the the present system of water storage, a considerable water wastage. But when the dry season with constant Trade winds and long continued droughts arrives, there are enormous losses from evaporation and while the storage facilities are sufficient for the present ship traffic and the average dry year, should there be a considerable increase in the number of ships passing through or should there be a very unusual drought the amount of water on hand might prove too small in proportion to the load. It is with a view to preventing such a situation as this that the districts of San Juan de Pequeni and El Vigia around the headwaters of the Chagres River have been taken over by the United States authorities and will soon disappear under water to give way for new improvements for the Canal.

Recently the Washington government informed the Panaman government that for the purpose of carrying out a project of improvements for the Canal it would be necessary to take over about twenty-two

square miles of Panaman territory around the headwaters of the Chagres, a rural district devoted to agriculture and stock raising. This was complied with and a joint Panaman and American Commission visited the territory and conducted the ceremonies of cession and reception, giving instructions to the inhabitants as to the new laws by which they will henceforth be governed. The local officials and police officers received instructions as well as the school teachers and district authorities. Since the Canal Zone is really "dry territory" all bars and liquor stores were closed and sealed after an inventory had been taken of the stock on hand.

The Panama Canal government will construct a dam across the Chagres River at Alajeula which will permit the formation of an artificial lake extending as far as the mountains surrounding the districts of San Juan de Pequeni and El Vigia. This will serve as a reservoir to retain the water which is ordinarily wasted during the wet season, thus ensuring an adequate supply of water at all times for the operation of the Canal. A considerable number of the inhabitants who have been dispossessed will move to Gatuncillo in Panaman territory near Gamboa. That the movement of this population will constitute a new sanitary problem is undoubted since it contains a good many malaria carriers.

IMPROVED SANITATION FOR INTERIOR TOWNS

Pointing out that the sanitation of the interior towns of the Republic of Panama is not such as to invite immigration and that the lowering of the health rate of these towns is largely responsible for their backwardness and poor financial condition, the Rotary Club of Panama City is urging that the National Government install modern water supply and sewage disposal systems in Penonome, Santiago, Las Tablas, Chitre and La Palma. Panama, Colon, Gorgona, Matachin and Empire are all well supplied with water and their sewage disposal systems are satisfactory. It is argued that these benefits should be extended to other towns. This seems the more logical, since the Government is repairing the cemeteries at many interior places.

THE NATIONAL TUBERCULOSIS SANATORIUM

Dr. M. Gonzalez Revilla, official physician of Chiriqui Province, has addressed a letter to the Minister of Public Works urging that the National Sanatorium be located at Los Potrerillos or El Volcan. Chiriqui Province is one of the most beautiful parts of the Republic and is possessed of a delightful climate. Potrerillos is the terminal station of one of the branches of the Chiriqui Railroad and El Volcan, which has a greater elevation, is to be connected with Conception, on the railroad, by a fine automobile road voted by the last National Assembly. These sites as well as the Anton Valley, San Carlos, Pacora and Ceremeno are all under consideration by President Porras in whose hands the final selection of a location for the sanatorium rests.

PROJECTED HOSPITAL DEFEATED

At the town of Bocas del Toro, the place by the way where Columbus careened his ships on his third voyage, the Municipal Board met recently to consider a project to rebuild the old hospital and make it into an uptodate structure. The funds of the town were shown to be ample to meet the expenses but the board in its wisdom decided that it would be better to utilize them in increasing the wages of the town employees. Also, this is the year when we in Panama elect a President.

DR. POWERS VISITS THE ISTHMUS

Dr. L. M. Powers, the veteran Health Officer of Los Angeles, Cal., recently paid an extensive visit to the Panama Canal Zone. Under the guidance of Dr. J. L. Byrd, Health Officer of Colon, he inspected the work which is being done by the sanitary forces in the terminal cities, and in company with Dr. Lopez del Valle and Dr. Hugo Roberts, of Cuba, he went through the Miraflores Water Purification Plant.

A NEW CHIEF QUARANTINE OFFICER

Surgeon C. P. Knight, United States Public Health Service, accompanied by his wife and family, arrived on the steamship *Cristobal* on February 5, 1924. Dr. Knight is to relieve Surgeon William Colby Rucker, United States Public Health Service, who has been Chief Quarantine Officer since October, 1920. Dr. Knight was appointed Assistant Chief Quarantine Officer by the Governor of the Panama Canal since Dr. Rucker is not to be relieved until the close of the Conference of the Maritime Quarantine Authorities of the West Coast of South America of which he is the Secretary General.

HEALTH CENTRE FORMED

As one of the results of the recent visit of Miss Sally Lucas Jean, of the American Child Hygiene Association, a health centre has been formed in connection with the Balboa Club House. Health plays are being given by the children and several meetings of mothers have been held. The movement not only has the hearty backing of the Canal Zone government but has been taken up by Mrs. Jay J. Morrow, the wife of the Governor, and other prominent women.

DRUG TRAFFICKERS APPREHENDED

It is only by the most constant vigilance on the part of the various customs and other authorities that the traffic in habit forming drugs is curbed. In several of the surrounding countries there are distributing stations for the various Latin-American countries and it is an unending fight to keep these criminals from introducing their wares and spreading the drug habit among the native population. Recently the capture of two *cocaineros* not in any way connected in their operations, served to signalize the very great danger with which this traffic threatens those countries which have a large ignorant indigenous population. All over Central and South America it is the native Indian stock which supplies the labor market and if the integrity of this class is impaired by drugs the economic dissolution of this part of the world will follow. Panama has been most vigorous in the detection and punishment of the purveyors to the drug habit and it is hoped that some international cooperative scheme may be put in force which will definitely put these malefactors against the health and prosperity of these countries out of business.

PRENATAL WORK IN PANAMA

The Health Departments of the Canal Zone and the city of Panama are now carrying on work to the

end that every mother may be made comfortable during pregnancy and that her labor may be safe and her convalescence uneventful. Upon the Canal Zone, each District Physician is ready to give advice and instruction and when the time of delivery arrives the best of care and attention are available at Colon and Ancon Hospitals. In Panama City the prenatal and baby clinics of Santo Tomas Hospital are rendering increasingly valuable service. Connected with the clinic two native women act as nurses. The Panama Red Cross also conducts a baby clinic where good work is being done. In Colon, in addition to the services of Colon Hospital and the newly opened Panama Hospital, the Women's Club conducts a prenatal and baby clinic in the office of the Health Officers and employs a visiting nurse who works in cooperation with a visiting nurse attached to the Colon-Cristobal Health Office. As a result of these efforts, the infantile death rate which formerly was terrific, is being steadily reduced.

WASHINGTON LETTER

(From our own correspondent)

Washington, *July 1, 1924.*

HEALTH OFFICIALS WAR ON FLIES

Dr. W. C. Fowler, Health Officer of the District of Columbia, has launched a campaign against the housefly, and will distribute posters to warn the public of their danger to health. The delayed summer may have a deterrent action on flybreeding, but Washington has always suffered unduly from flies in its public markets and elsewhere.

MEDICAL SOCIETY ELECTION

Dr. Elijah W. Titus was elected president of the George Washington University Medical Society at a meeting held on the evening of May 18, 1924, in the medical school building of the University, H and Fourteenth Streets Northwest. Dr. Jesse T. Mann was elected vice-president, Dr. Boyce R. Bolton re-elected secretary, and Dr. Thomas C. Thompson made treasurer. The retiring president, Dr. Paul S. Putzki, delivered the year's presidential address, discussing The Surgical Aspect of Diseases of the Pancreas. A buffet supper followed the meeting.

MEETING OF THE DISTRICT MEDICAL SOCIETY

A discussion of smallpox, now prevalent in Washington, constituted the program of the Medical Society of the District of Columbia at the weekly meeting in the Medical Building, 1718 M Street, Northwest, at 8 o'clock, May 28, 1924. Dr. Frank Leech read a paper on Clinical Diagnosis, Dr. J. W. Lindsay on Laboratory Diagnosis, and Dr. H. C. Macatee on Prophylaxis. The discussion was led by Dr. J. P. Leake, of the Public Health Service.

For several months smallpox has been occurring in the District, and three new cases of smallpox, all mild, were discovered on May 21, 1924, and brought the number of active cases under treatment in the District up to nine. One woman patient in a hospital was discovered suffering from the disease, and the ward was isolated. A colored woman, also suffering from the disease, was apprehended when she appeared at the dispensary of a hospital for treatment. A colored man was found with smallpox in Anacostia. Health authorities also have another man under observation. Approximately 150 cases have occurred since the beginning of the outbreak. All have been among unvaccinated persons, and for the most part are among newly arrived colored laborers from the Southern States.

RETIRED MEDICAL OFFICERS' PAY

The Hull bill, which aims to correct an injustice to the older retired medical officers of the army, navy and public health service, is now on the House calendar. The pay act of 1922, so just and equitable in other respects, unfortunately discriminates against these most deserving officers, veterans, many of them having more than forty years' active service to their credit—men who have served faithfully through four great wars, including the World War. These are the officers who, because they happened to be retired before July 1, 1922, are denied the benefit granted by the pay act of 1922. These veteran officers have reason to be dissatisfied. They see officers who were always their juniors during their active service now receiving the deserved increase granted for long and faithful service, which recognition is denied to them. By repealing the discriminating language, officers of equal rank and equal service will be treated alike and relieved of the embarrassment and sense of injustice under which they now suffer.

INDUSTRIAL STATUS OF THE DISTRICT OF COLUMBIA

The District of Columbia is the stepchild of the Nation. Disenfranchised with regard to local matters, its inhabitants have no voice in its government. The various commercial organizations and neighborhood societies meet and resolve; they appeal to the Commissioners (who are appointed by the President, "by and with the consent of the Senate"); they even appeal to the District of Columbia Committee of the House of Representatives, but when it comes to essentials they are impotent politically. The House of Representatives is the Board of Aldermen of the City of Washington, and hence, the citizens of some rural Congressional District has greater power in the regulation of the municipal affairs of the Nation's capital than does the largest property holder therein. True it is that the Federal Government pays its forty per cent. of the local taxes, but the upkeep of this most beautiful city in the world is so heavy that the sixty per cent. remaining is a genuine burden, reaching a higher taxation valuation and rate than in most cities of the same size. The result is a lowering of the civic pride, and an absence of that community spirit which is met elsewhere. This reflects itself in things medical and the Washingtonian, who must maintain a residence elsewhere in order to vote, has relatively little interest in the Municipal Health Department and the local hospitals. The great industry is the government workshops, where underpaid clerks make futile black marks on white paper all day long; the remainder of the population lives off of each other and the visitor. The result is a "hard collar" population of nonproducers, and a civic attitude of mind unlike that of any other great city. Hence, while it is a pleasant and beautiful place in which to dwell, it has no industrial existence, other than clerical and mercantile, and no factory population, while of municipal entity and consciousness it has none.

PARIS LETTER

(*From our own correspondent*)

PARIS, *July 25, 1924.*

CRAVINGS

Professor Carnot in a recent lecture upon food emphasized some points that can be useful to any practitioner. Contrary to general belief, likes and dislikes in the matter of food depend more upon mental than upon physical conditions. The palate is influenced by the temperament, not the temperament by the palate, and to the doctor a knowledge of his patients' favorite dishes is a sure index of their mental and emotional state. Certain temperaments create cravings for certain forms of diet, and one need not be a doctor to gauge the mentality of the man whose favorite foods are roast beef, potatoes, and suet puddings and whose favorite drink is beer. He would naturally be credited with a less sensitive palate than the man to whom soft roes are the most attractive dish and champagne the only drinkable beverage. But the difference is really a difference of temperament.

If the beefeater despises the epicure for his fastidious taste, he is actually despising him for possessing a more delicately sensitive mentality; and the epicure who accuses the beefeater of being a temperamentally coarser creature than himself has science on his side. Because a certain form of diet is most appetizing to the palate, it does not follow that it is the one best suited to the requirements of the body. Anyone, for instance, susceptible to great mental or emotional changes naturally craves for a stimulating diet—the very diet to be avoided. The temperament which impels a person towards the cultivation of psychic powers invariably produces a craving for fruit, but it is quite possible that such a diet might be totally unsuitable.

The palate rarely undergoes any radical change. What appeals to it in childhood usually appeals to it in later life. A man may not, perhaps, take the same delight in sucking sweets at the age of forty as he did at the age of ten, but he probably takes his sugar in the form of whisky. There is a broadening of taste to correspond with the broadening of the mind, but only a radical change of temperament could produce any great variation in the likes and dislikes of the palate. There is, of course, such a thing as an acquired taste, but the change that is brought about is primarily a mental change. The change of the mental attitude from "I don't like it" to "I shall like it" would soon produce a corresponding change in the palate. Sudden changes in the palate are the common result of sudden changes of environment, and under the influence of unusual emotions people will often develop a craving for foods which under normal conditions they cannot touch. To make the best of yourself you require good food, good rest and recreation, and the less alcohol the better. Good food and rest enough, but not too much of either. You need much less food than one would imagine to keep you in condition. Most of us habitually eat too much, overloading the system, and dulling the brain. Don't do it, but take enough. While eating give your attention to it, and enjoy your food. That makes for good digestion; while eating mechanically and thinking business does not. Particularly make sure that your food contains a good supply of the essential vitamines. In this respect you will not go short, if you exhibit a partiality for green vegetables and tomatoes. These are the chief ones, but there are many others, such as potatoes, butter, fresh meat, especially the fat, wholemeal bread, unpolished rice, fresh eggs, new milk, lemon, and other fruit juices.

AMERICAN MEDICAL SOCIETY

Under the presidency of Dr. Edmund L. Gros, the American Medical Society of Paris met at the American University Union last Wednesday night (June 18th) to listen to an interesting lecture by Professor Claude, translated into English by Dr. Dax. Professor Claude described new methods of exploration of the nervous system in cases of mental excitation and depression, which made it possible to predict impending brain storms, as also to differentiate between mental disturbances of a permanent or a temporary character. He has made a careful study of the oculocardiac and solar reflexes in these cases, and showed some interesting conclusions. The oculocardiac reflex is a slowing of the heart during gentle pressure on the eye balls, which exists in certain forms of nerve disturbance and not in others. Such a reflex is positive in impending melancholia, epilepsy, and absent in psychosis due to intoxications and infections such as the insanity sometimes following childbirth. Professor Claude's communication is of great clinical importance, throwing a new light on obscure disturbances of the brain and nervous system.

VENEREAL DISEASE

Speaking on the ravages of venereal disease, Sir James Crichton-Browne stated at the conference of the Sanitary Inspectors' Association at Paris, that syphilis caused 2,023 deaths in England and Wales in 1920, and other venereal diseases 2,103. No fewer than one tenth of the people in our large towns, he said, were infected with syphilis and a much larger proportion with gonorrhea. The latter was prolific of sterility, blindness and of rheumatic and joint affections. Syphilis was the direct cause of the vast number of cases of abortion, miscarriage, stillbirth and infant mortality, and as a hidden assassin was undoubtedly responsible for a large number of deaths which were attributed to other causes.

"Syphilis," he said, "is an infectious disease due to a specific organism which we can show you on the kinematograph, darting and wriggling about, serpentlike, on its malign career. That organism can be intercepted in its career. The disease can be prevented. If you ask why it is not prevented the answer must be because of neglect on the one hand and ecclesiastical prejudice and shortsighted morality on the other. The proper and infallible preventive is chastity and marital fidelity, but these have failed lamentably. To proclaim a new antidote to a deadly poison is not to encourage people to run the risk of swallowing the poison. There is the clearest and most definite medical evidence that the spread of venereal disease can be prevented by the adoption of methods of selfdisinfection. We must have the suppression of unqualified quacks and herbalists. We must have a network of clinics throughout the country; hospitals for the prolonged treatment of women and girls, and laboratories for investigation.

Book Reviews

INTERNAL SECRETIONS

The Internal Secretions. For the Use of Students and Physicians. By Dr. Arthur Weil. Authorized Translation of Third German Edition, by Jacob Gutman, M.D., Phar. D., F.A.C.P. New York: The Macmillan Company, 1924. Pp. 287.

This is one of the most useful books on general endocrinology which has been published. The point of view is practical throughout and the enthusiasm of Weil is communicated to the reader. The main value of the book is that function is given preference over gland, and this is of vital importance. For these and other valid reasons the general practitioner should find much use for this convenient volume. Doctor Gutman was the person upon whom the task of translation should naturally fall, for he has been for some time closely allied with the work of Weil. He has done a decidedly worthy job of it.

STERILITY

Fertility and Sterility in Human Marriages. By Edward Reynolds, M.D., and Donald Macomber, M.D. With Section on Determining Causes of Male Sterility, by Edward L. Young, Jr., M.D. Illustrated. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 285.

In this book the subject is handled from the physiological as well as the biological point of view. The organic conditions are considered apart from those arising from physiological causes. The section dealing with the marital habit is exceptionally well handled. The chapter on impotence on the other hand is somewhat brief and far from satisfactory for a book of this type. The treatments advocated for the various organic conditions is quite comprehensive. On the whole it is a book well worth reading.

HEREDITY

Genetics. An Introduction to the Study of Heredity. By Herbert Eugene Walter. With 92 figures and diagrams. Revised Edition. New York: The Macmillan Company, 1922.

Walter has had in mind a large class of readers and students to whom he addresses his comprehensive review of the subject of heredity or genetics. He gives a survey of the history of the subject since Darwin set forth the idea of a genetic development of species out of that which had preceded. He discusses the various theories which often conflict but which, nevertheless, have cooperated in the furthering of investigation into the nature of life and its progress. He points out the most important facts in this subject of heredity while he gives the history of their discovery. He shows the practical application of these facts to the various forms of life, with a particular emphasis where the problems involved become of gravest significance. This is in the human species, where the writer stresses particularly the great importance of heredity among the other chief factors of life. He represents these graphically as forming a triangle whose three sides are environment, response, and heredity, the last occupying the basic position. He brings to his readers, furthermore, the great responsibility which this subject entails through a discussion of the evils introduced and retained in the human species as well as by indication of the control that may be brought about. In a book of so considerable a size in its discussion of these many points he cannot do more than briefly suggest the chief avenues of relative promise for eugenic control of heritable factors. He acknowledges the difficulties of the task. Yet he might have offered further suggestion which would have made these difficulties more understandable and also have given more promising approach to them. This would be in the fields designated by the other sides of his triangle. Important as heredity is, there is danger of laying upon it such emphasis that the responsibility and the opportunity which come through environment and chiefly through the factor of individual response are allowed to slip out of sight. Present day psychology has opened a promising field of study of individual response and of its readjustment. Through this much is gained, for the individual at least, in definite work upon the interaction of the three factors, environment, response, and heredity. Emphasis upon this psychological point of view throws light also upon the more general facts of heredity themselves as it aids eventually, through the factor of response, in the larger eugenic control.

ANESTHESIA

The Science and Art of Anesthesia. By Colonel William Webster, D.S.O., M.D., C.M. St. Louis, Mo.: C. V. Mosby Co., 1924. Pp. 214.

The keynote to the book is given in the preface, "To place before the medical student and the physician in general practice, who perhaps gives only an occasional anesthetic, in concise form but not so brief as to leave matters imperfectly explained, a small manual on the subject of anesthesia."

The history is accurate, concise, and interesting. The chapter on physiology is unusually good and many professional anesthetists would cease cyanosing and asphyxiating their patients if this chapter were carefully read: "The ganglion cells of the cerebral cortex are thus shown to be exceedingly sensitive to lack of oxygen. This indicates that a degree of narcosis just sufficient to paralyze consciousness is the desirable one and not a deeper narcosis which completely inhibits oxidative processes and may thus, if prolonged, do permanent injury to the brain."

The chapter on chloroform is probably the weakest in the book. The danger from this drug in administering it, especially to young children, is not sufficiently stressed. The chapters on ether and nitrous oxide are good. In the last paragraph of the chapter on nitrous oxide the statement that "Ether is invariably the anesthetic used for operating in many of the sanatoria for tuberculous patients" seems out of place and is entirely at variance with most writers on the subject. The chapter on ethylene is short, but to the point—as is also the chapter on ethyl chloride, ethyl bromide and somnoform. The special physiology of other drugs, ethyl chloride, ethyl bromide, somnoform and special pathology of

local and spinal analgesia make these chapters valuable to specialist as well as to the occasional anesthetist. Shock—preliminary and postoperative treatment (medicolegal aspect) and other special chapters are dealt with in a masterly manner. The style, brief, direct, concise, is attractive to those desiring a working knowledge of anesthesia. On controversial points, such as heating anesthetic gases and preliminary medication, the author is fair and gives both sides of any question without prejudice. The book, on the whole, is well worth reading, by the occasional anesthetist and by the specialist.

DISEASES OF MIDDLE LIFE

Diseases of Middle Life. The Prevention, Recognition, and Treatment of the Morbid Processes of Special Significance in this Critical Life Period. Comprising Twenty-two Original Articles by Various Eminent Authorities. Edited by Frank A. Craig, M.D. Two volumes, Illustrated. Philadelphia: F. A. Davis Co., 1924.

This series of monographs by various well known authors should prove of distinct value to the medical profession. Many new divisions and groupings have come to be recognized, including the two ends of the scale, pediatrics and geriatrics. Now we have the larger intermediary range classified. Naturally this is but a link between and in a way tends to add to the concept of man as a member of a categorical pigeon-holed machine. However, it is just as well, as we will be more than ever forced to the position of regarding man as a complete entity, fulfilling his biological functions in relation to his environment, internal as well as external.

The point is well taken that in middle age we most frequently find signs of a giving way of the machine—here and there, and often it is of prime importance to be on the lookout so we may save the mechanism from further ravages in later life. We could well go a step further and state that the best time to study the breakdowns which occur in later years should be forestalled during infancy and childhood, but alas we have travelled but a little way on this more sensible route. Perhaps the best work along these lines has been done in the field of mental medicine, in accordance with the teachings of the psychoanalytic school. The contributors to these two volumes have been selected with rare judgment, and the subjects are presented simply and lucidly.

DISEASES OF THE BREAST

The Diseases of the Breast. By Willmott H. Evans, M.D., B.S., B.Sc., F.R.C.S. With 600 illustrations, of which Fifteen Are Colored. London: The University of London Press, Ltd., 1923.

An exceedingly fine piece of work filling a need. The pathophysiology of the mammary gland has in the past scarcely received the recognition which the subject justified. Evans has presented the topic in an adequate fashion. He discusses the physiology, anatomy, pathology and treatment of the various diseases and anomalies of the breast. Among the subjects of common interest, which he discusses, are mastitis, abscesses, injuries, tuberculosis, syphilis, the various skin disturbances and new growths. These latter are given careful consideration, and the entire subject is gone over completely. There can be no doubt that from a purely practical point of view a work of this kind is of great value.

DIABETES

Management of Diabetes. Treatment by Dietary Regulation and the Use of Insulin. By George A. Harrop, Jr., M.D. Introduction by Walter W. Palmer, M. D. New York: Paul B. Hoeber, Inc., 1924.

This manual is intended for physicians, nurses and dietitians and brings the results of the experiences gained in a course of instruction given at the Presbyterian Hospital, New York City. The authors feel that it is necessitated by the recent advances made in insulin therapy and it contains many practical pointers for those who are in charge of diabetic patients. After discussing the normal metabolism and acid base mechanism and their derangements in diabetes mellitus and in acidosis, the general principles of dietary regulation and insulin treatment are outlined. The practical problems in the use of insulin and its use in acidosis are discussed. The complications of diabetes are taken up briefly and clearly. The chapter on the diet of the diabetic patient, as well as the food tables, are very practical and useful. Only those important methods of blood and urine analysis are given as have been found to be practical and not too difficult to carry out, such as the tests for the alkaline reserve of the blood plasma, the Folin and Wu method of determining the blood sugar, the ferric chloride and the nitroprussic tests for ketones, the Benedict qualitative test and the fermentation test for glucose in the urine and the acid heat test for albumin in the urine. The aim of the authors is to give only well established and practical information and it has been well done.

A YEAR BOOK OF TREATMENT

The International Medical Annual. A Year Book of Treatment and Practitioner's Index. Forty-second year. New York: William Wood & Co., 1924.

The *International Medical Annual for 1924* appears as usual in dictionary form with numerous excellent illustrations, fulfilling its purpose of serving as a kind of serial textbook of medicine for the general practitioner in whatever part of the world he may be. The specialist also is furnished in brief articles with news as to the way in which matters are moving in special branches of medicine other than his own. An evident attempt has been made, and successfully, to give a general impression of the direction in which the art and science of medicine is progressing. This is done through statement of fact and through criticism and voicing of opinions by the authorities who contribute the articles. It is undeniable that the drift of medicine today is toward prevention of disease. Prevention is based on the premise that all diseases are of course due to a cause or causes; that these should be made the subjects of research; and that the knowledge thus gained should be applied to the abolition of these causes. The study of bacteriology has in recent years given much impetus to this view of disease, which nevertheless has been held in abstract form since the dawn of medical study. An examination even somewhat cursory of this volume of the *International Medical Annual* cannot fail to reveal the progress of this spirit of prevention.

Although the form of the volume is that of a dictionary of medicine, with subjects arranged and dis-

cussed in alphabetical order, the usefulness of the book is greatly enhanced by a detailed general index at the end, giving the subjects of the longer articles in heavy type.

CONGENITAL SYPHILIS

Abstracts Secured in the Compilation of Vereneal Disease Information and on File in the Division of Venereal Diseases of the U. S. Public Health Service. Compilation No. 2. Washington, D. C.: Government Printing Office, 1924. Pp. 111.

In the author's index of these abstracts are noted the names of the leading syphilographers of the world. Aside from these authorities, there appear also the names of a number of leading specialists in other fields, such as obstetrics and pediatrics, whose work renders these observations in congenital syphilis of much value.

These abstracts should be helpful for reference, as the entire subject is well covered by many observations from many different clinics in this country and Europe. For example, if it is desired to ascertain the latest prenatal treatment of congenital syphilis, one has only to turn to this chapter and find in concise form the methods employed in at least nine different and widely separated well run clinics. Statistics abound throughout but are presented in a manner less nauseating than where they are usually encountered.

There are all told six chapters, with twelve subdivisions of the chapter on stigmata, each subdivision dealing with a separate organ or symptom. In all, 196 authors are represented by the different abstracts, many of the authors contributing several papers. The index of authors is a valuable addition and refers by page number directly to the abstracts of their respective articles.

In this particular subject, such a compilation might prove to be of value in the hands of the laity, as certain of these abstracts show in plain language the value of the Wassermann test and the great good that is to be derived toward preventing congenital syphilis by early and well directed treatment of the pregnant mother.

DIAGNOSIS AND THERAPY

Irrtümer der Allgemeinen Diagnostik und Therapie sowie deren Verhütung. Herausgegeben von Prof. Dr. J. Schwalbe, Zweites Heft. Irrtümer der Ernährungstherapie. Von Professor Dr. Hermann Strauss. Grundirrtümer in der Ernährung der Kinder (jenseits der Säuglingszeit) und deren Verhütung. Von. Geh. Med.-Rat. Prof. Dr. Arthur Schlossmann. Mit. 11 Textabbildungen Elektrodiagnostik und Elektrotherapie (einschliesslich Diathermie). Von Professor Dr. Ludwig Mann. Irrtümer der Hydro-und Theramotherapie und deren Verhütung. Von Professor Dr. Alois Strasser. Orthopädie, Massage und Heilgymnastik. Von Privatdozent Dr. Georg Hohmann. Mit 30 Textabbildungen. Irrtümer der Balneotherapie und deren Verhütung. Von Med.-Rat Dozent Dr. Karl Zörkendörfer. Klimatotherapie. Von Dr. M. van Oordt. Leipzig: Verlag von Georg Thieme, 1923.

This is the second volume of the series *Irrtümer der allgemeinen Diagnostik und Therapie sowie deren Verhütung,* written by many collaborators under the editorship of Schwalbe. The first chapter deals with the general mistakes commonly made in dietotherapy in diseases of the digestive, vascular and renal systems, metabolic disturbances, febrile processes, senility and the feeding of preoperative and postoperative cases. The special forms of diet are also discussed. An appendix deals with the various types of artificial feeding. Schlossmann discusses the basic errors in the feeding of children beyond the infantile stage. Mann is assigned the subjects of electrodiagnosis and electrotherapy including diathermy. Strasser discusses hydrotherapy and thermotherapy. Hohmann deals with orthopedics, massage and gymnastics. The mistakes commonly made in balneotherapy and their avoidance is discussed by Zörkendörfer. Climatotherapy is exhaustively discussed by van Oordt. Each chapter has an up to date bibliography appended.

SCHOOL HEALTH SUPERVISION

Medical and Sanitary Inspection of Schools. For the Health Officer, the Physician, the Nurse and the Teacher. By S. W. Newmayer, A.B., M.D. Illustrated with seventy-nine Engravings and six Full Page Plates. Philadelphia and New York: Lea and Febiger, 1924.

This highly interesting and presentable volume represents the ideas and views gained by the author in an experience with his subject covering more than twenty-four years. Its purpose, as stated by the author, is to give knowledge rather than information, and the methods employed in various cities are offered as an "ideal" in the sense that they represent the best practice of the day in each of the various activities of school health supervision.

The work is divided into seven parts, administration, the school building and grounds, communicable diseases, physical defects, the health of teachers, mentality and allied subjects of school medical supervision. It will be seen that practically every phase of school inspection is covered, and a careful reading of the volume gives the impression of a thorough familiarity of the author with his subject and his ability to express himself clearly and concisely. In an interesting chapter on sex hygiene, the author discusses the problem of the advisability of teaching this subject to school children. His conclusion is that the preponderance of opinion is opposed to it, in view of the many difficulties and obstacles encountered in a proper handling of this delicate subject.

The publishers have joined with the author in producing a beautiful and instructive volume, which can be commended both for its thoroughness as well as for its style.

MILITARY HOSPITALS IN THE UNITED STATES

The Medical Department of the United States Army in the World War; Volume V: Military Hospitals in the United States. Prepared under the direction of Maj. Gen. M. W. Ireland, M.D., Surgeon General of the Army, by Lieut. Col. Frank W. Weed, M.C., U. S. A. Washington: Government Printing Office, 1923.

This volume supplies a record of the provision of military hospitals during the World War, and a description of their administrative operation. General topics incidental to the whole subject are first discussed, then the individual organizations. The volume opens with a history of the evolution of the military hospital, from the type of care described by Homer, when the wounded were transported by hand or chariot to the tents or "black ships" in the rear, to the military hospital in use when the United States entered the World War. Hospital procure-

ment, including discussion of methods, hospitalization schemes, and types of hospitals, is next taken up, followed by sections on construction and improvement; organization, administration, and control; and types of hospitals. The latter half of the volume is devoted to descriptions of individual hospitals, classified as general, base, embarkation, and debarkation hospitals.

Plans and statistical tables are numerous and excellent, as are the plates and illustrations. Each chapter is supplemented by a list of references, giving location of sources listed, and the whole volume is well indexed.

WORK AND LEISURE

The Interpreter's House. By Struthers Burt. New York: Charles Scribner's Sons, 1924. Pp. 445.

Deservedly, one of the best new novels. For with a commonplace story and unostentatious style. Struthers Burt gives us a few months of the Life of Gulian Eyre, according to the least blasé of magazine fashions.

Instead of the poor boy working up to his final triumph and hand of the heiress, we have a rich man, going to work. And he doesn't marry an heiress in the end or retrieve the family fortunes. He will probably have to slave to make ends meet. His former butterfly life is over, and, we draw a sigh of pleasure, for it is well told, he is glad.

The writer unfolds a thoroughly sympathetic story—almost a successful plea for the leisure class. At least he makes it seem plausible for a young New York aristocrat to get to work and become human. There are many pleasant flashes through the book, aptnesses of expression that bear rereading. Burt sees and feels, and he is honest with himself.

If there is any fault to find it is that the hero is a little too much the ideal writer. When we see the Gulian Eyres in real life we suffer disillusion. Some have such prominent Adam's apples, others affect monstrous baggy clothes, still others are weedy and affected. Gulian Eyre has the sleek exterior of a matinee idol. It comes with something of a shock to find him in business and at the same time courting beauty successfully with his pen.

Medicoliterary Notes.

The revolving stage, first brought to perfection by German theatrical architects, has been put to use to help solve the housing problem in Germany, the *Living Age* tells us. Houses of this type consist principally of one large room, one side of which is occupied by a circular revolving platform. This platform is divided into three sections by partitions radiating from the center. One of these compartments is furnished like a living room, another like a dining room, and the third like a bedroom. Other necessaries are in the large general room in one end of which the platform is located. The occupant, we can picture, gets out of bed, steps off the platform, presses a button, and his bedroom disappears and the dining room appears. After breakfast, he again steps off the platform, presses the button, and in comes the living room. The *Living Age* adds that there is as yet no news of the fate of the man who forgets to step off the platform before pressing the button!

* * * *

A recent report on some of the rules and regulations of the government pawnshop system of France reveals some interesting and amusing data. Manuscripts of novels, plays, stories and poems are accepted on the same conditions as are watches and jewelry. The shops' experts appraise the value of these manuscripts and lend money accordingly. To accommodate owners of automobiles, should they happen to be unable to meet the high prices of gasoline, tires, etc., the government pawnshops are negotiating for the purchase of a large tract of land outside Paris for the erection of garages where financially embarrassed owners may store pawned cars. The attempt of a farmer near Boulogne to pawn a cow caused the introduction of the following regulation: "Cows are not acceptable because they come under the title of perishable goods. A cow is liable to die in the sad surroundings of a pawnshop, thus making it impossible for the government to get its money if the pawner does not repay the loan or redeem the pledge if requested. Also there would be a legal tangle if a cow should become a mother during her sojourn in a pawnshop."

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Ernest Poole's new novel, *The Avalanche,* is the love story of a young physician and a New York girl. The latter's one ambition is to build up for her husband a great success. This success proves to be "the avalanche" which in the end overwhelms their love.

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The first Pan-American Red Cross Conference was held in Buenos Aires, November 25-December 1, 1923, inclusive. A full account of the various sessions and a reprint of the resolutions passed is given in the *World's Health* for February.

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At the annual meeting of the American Public Health Association last fall in Boston, the section of public health nursing was made permanent after two years' probation.

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The total average daily consumption of water in New York City in 1922 was 707,000,000 gallons. Each resident of New York City averaged forty-three rides on the street railway lines in 1860 and 432 in 1922.—*Greater New York.*

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Probably few New Yorkers remember, if they ever knew, that a little more than one hundred years ago, Greenwich Village was one of the best health resorts of Manhattan Island. In 1803, 1805 and 1822 occurred the great yellow fever epidemics in New York, causing many individuals as well as business firms, banks, and other institutions to move from the lower part of the city to temporary headquarters "up town" or north of Canal Street, so that by the last year named, quite a settlement had been established which gradually became permanent.

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The press has recently given much attention to the Milan production of Arrigo Boito's opera, *Nerone.* The Italian papers have announced that the opera, in spite of its prodigious length, was a brilliant success. This music drama portrays the contrast between pagan Rome of the time of Nero and the simple worship of the Christians who were forced at that time to meet for the most part in the catacombs and other secret places. It is said that the stage settings are not only of extraordinary beauty but have achieved historic accuracy in every detail.

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Williamsted, Curacao, Dutch West Indies, is said to be the cleanest city in the world. It is a bit of old Holland upon a desert tropical island, and, according to the *Nation's Health,* posed for the well known pictures of Spotless Town, made famous through advertising.

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Among the cleverest and most interesting shows of the season is the *Grand Street Follies* at the Neighborhood Playhouse. The impersonations of well known men about town, and of famous actors and actresses are quite remarkable in their quality of caricature, and the various skits of the evening show not only unusual cleverness of lines but an intimate knowledge of current events and political situations.

* * * *

A London dispatch quotes from a traffic report the statement that English women are much more careful when mixing with London traffic than men are. Only one third of last year's street accidents befell women. The victims are rarely London women, and even provincial women visitors are more careful of their safety than the men.

Abstracts from Current Literature

ENDOCRINOLOGY

Effect of Thyroidectemy Upon Calcium Content of Blood Serum.—I. M. Rabinowitch (*Journal of Laboratory and Clinical Medicine,* May, 1924) reports in 114 consecutive thyroidectomies two cases of tetany. In each case the symptoms were relieved with calcium salts and the patients ultimately recovered, requiring no further medication. In neither case was parathyroid tissue found in the portion of thyroid gland removed, and in both cases the calcium content of the blood serum was lowered. It appeared reasonable to assume that in these cases the tetany was not due to the removal, but to trauma of the parathyroid glands from manipulation, or temporary interference with the blood supply. This possibility was investigated. Twenty-six unselected cases in which the operation included polar ligation, unilateral lobectomy, bilateral lobectomy, and subtotal thyroidectomy, were studied. Fifty-seven per cent. of these showed a decrease in the calcium value.

Gumma of the Thyroid.—C. Williams and B. Steinberg (*Surgery, Gynecology, and Obstetrics,* June, 1924) present the following conclusions: 1. Gumma of the thyroid is a rare lesion of syphilis. 2. Women are affected more frequently than men. 3. It may result from both hereditary and acquired syphilis. 4. The symptoms are those of mechanical interference from the tumor. As a rule there is no disturbance of thyroid function. When present, it is usually myxedema, rarely hyperthyroidism. 5. The prognosis with active treatment is good. 6. The appearance of the tumor may lead to confusion with cancer.

Differential Diagnosis of Thyroid Diseases.—W. M. Boothby (*Annals of Surgery,* November, 1923) discusses the importance of correct differential diagnosis in surgery of the thyroid gland in particular, as it affects four kinds of thyroid disease, namely, diffuse colloid goitre, adenomatous goitre without hyperthyroidism, adenomatous goitre with hyperthyroidism, and exophthalmic goitre. Among the points which he brings out are the following:

Diffuse colloid goitre is a symmetric enlargement of the thyroid gland, characterized pathologically by an excess of colloid in the acini, and unassociated with symptoms of hyperthyroidism. On palpation the gland feels quite similar to that in typical exophthalmic goitre, and therefore, if the enlargement ocurs in a nervous unstable person who has symptoms recognized as "effort syndrome" or "disordered action of the heart," a mistaken diagnosis of exophthalmic goitre is readily and unwittingly made. The basal metabolic rate is a great help in distinguishing these cases from exophthalmic goitre, because the rate is not only not persistently elevated in diffuse colloid goitre, but is usually somewhat below normal, while in exophthalmic goitre, with rare exceptions, it is more than twenty per cent. above normal. Operation is indicated only if the goitre becomes excessively large and does not respond to medication; such failure of medication indicates that the enlargement may be due to colloid adenomatous tissue, and not to typical diffuse colloid goitre.

Patients with diffuse colloid goitre are safe operative risks; they also get well under medical treatment; therefore, the surgeon, by including the condition in the classification of exophthalmic goitre, will greatly reduce his mortality rate, and similarly the internist will increase the number of patients getting well under medical treatment. At the Mayo Clinic, no patient with diffuse colloid goitre and a normal basal metabolic rate has been operated on during 1922.

Adenomatous goitre masses, as a rule, do not respond completely to thyroid or iodine medication; in fact, iodine is particularly dangerous in cases of long standing of adenomatous goitre without hyperthyroidism, because the iodine is likely to stimulate, or rather aid the adenomatous tissue to hyperfunction.

Operation is indicated for adenomatous goitre without hyperthyroidism for cosmetic reasons, for the relief of pressure symptoms, and as a preventive measure against future hyperthyroidism. In order to estimate the probable risk to the patient, accurate distinction must be made between it and adenomatous goitre with hyperthyroidism. For this purpose the basal metabolic rate is of great help, because if it is within normal limits it excludes hyperthyroidism.

Adenomatous goitre with hyperthyroidism is a constitutional disease due to the presence in the thyroid gland of adenomatous tissue.

From the surgical viewpoint, the fact that the constitutional symptoms are due to the activity of the tumor is very important, because it permits the surgeon to assure the patient, before operation, of almost certain cure, provided the disease has not lasted long enough to produce permanent and irreparable damage of the heart or other organs. The operative risk is, however, much greater than in cases of adenomatous goitre without hyperthyroidism, and may be higher than in cases of exophthalmic goitre.

Exophthalmic goitre is a constitutional disease, apparently due to excessive, probably abnormal, secretion of an enlarged thyroid gland with pathologically diffuse, parenchymatous hypertrophy and hyperplasia. The condition is characterized by an increased basal metabolic rate and the resulting secondary manifestations, by a peculiar nervous syndrome, and, usually, by exophthalmos with a tendency to gastrointestinal crisis of vomiting and diarrhea. The cause of the altered pathology and disturbed function of the thyroid gland is not known.

In reply to the question: "If both exophthalmic goitre and adenomatous goitre with hyperthyroidism are due to an excess of thyroid secretion, can there be a differentiation into two diseases?" several hypothetical answers are possible, but the one held by Plummer as the most probable is briefly as follows:

The symptoms of adenomatous goitre with hyperthyroidism can be produced by the administration of an excess of thyroid extract or thyroxin; therefore, adenomatous goitre with hyperthyroidism is regarded as due to the presence in the body of an excess of normal thyroid secretion.

The symptoms of exophthalmic goitre, however, cannot in their entirety be produced by thyroid feeding. The symptoms which are not produced in characteristic form are exophthalmos, the typical gastrointestinal crisis, the peculiar nervous phenomena, and finally the metabolic status, as a result of which a postoperative reaction may arise which terminates in death within about thirty-six hours.

All of these symptoms which are characteristic of exophthalmic goitre can probably be explained on the assumption that the secretion of the thyroid gland is not only present in excess, but that it is also an abnormal product.

Certain Aspects of the Goitre Problem.—G. W. Crile (*International Journal of Medicine and Surgery,* April, 1924): Since the essential principle of the thyroid secretion is iodine and since it has been proved experimentally and clinically that the administration of iodine can produce the characteristic symptoms of a hyperthyroidism, it follows: 1, that if there is a functional deficiency iodine should be given either in the form produced by the gland itself—thyroid extract or thyroxin, or in a salt of iodine—sodium or ferrous iodide, except in cases of adenomata; and, 2, that if there is an excess of the thyroid secretion, the thyroid activity should be diminished by control and by excision of one or both lobes of the gland, according to the indications in the individual case.

The preferred treatment of patients with hyperthyroidism may be outlined as follows:

1. From the moment at which the patient is presented at the office he is subjected to a direct personal and environmental control, that is, every contact with the surgeon, with assistants, with nurses, with attendants, from the moment of his preliminary examination to the beginning of his hospital treatment, is made as free from excitation as is possible.

2. Upon his entrance to the hospital, methods for the restoration of the exhausted cells are inaugurated, that is, fluids are urged; complete rest is induced by sedatives if required; the myocardium is strengthened by digitalization, and if the condition of the patient demands it, a transfusion of blood is given.

3. The operation is performed in the patient's room and the extent of each stage in the operation is controlled by the condition of the patient. In practically all cases the operation is divided into two stages and often into three, namely, ligation of one pole, the ligation of the other pole,

he thyroidectomy. If during the surgical procedure it becomes apparent that the patient's condition is becoming aggravated, the operation is stopped at the moment, the wound packed with gauze and the patient left until his condition justifies the completion of the operation.

4. The anesthetic is always nitrous oxid oxygen and the degree of anesthesia is never allowed to pass beyond the stage of analgesia except momentarily when an especially painful moment is foreseen.

5. The postoperative treatment duplicates the preöperative regimen—rest secured by sedatives if necessary; abundant water; control of the heart; transfusion if indicated.

Clinical and Röntgenologic Study of Hypophyseal and Cerebral Obesity and Genital Atrophy.—W. Raab (*Wiener Archiv. für Innere Medizin,* March 10, 1924) states that the syndrome of dyastrophia adiposogenitalis is not absolutely fixed. Its chief elements, obesity and genital atrophy, or hypoplasia, may appear in varying degrees or entirely isolated. In the majority of cases it develops during infancy. The kinds of etiologic diseases varies for children and adults (in children more often hydrocephalus, in adults more often tumors). The hypophysis plays an important part in the genesis of the disease picture. The functionally affected part of the hypophysis appear to be the middle lobe (the site of production for the internal secretion), the posterior lobe, and the pedicle (secretory passages). The hormone of the hypophysis seems to have a regulating influence upon the metabolic and genitotrophic centres lying in the floor of the midbrain. Tumors and other processes within the hypophysis, that lead to an injury of the middle and posterior lobes, produce the partial or complete disease picture of dystrophia adiposogenitalis. The tumors arising in the anterior lobe in acromegaly affect the other parts relatively slightly; they lead mostly to genital disturbances and to obesity only when they exert pressure upon the floor of the third ventricle. Recovery follows either an artificial or spontaneous diminution of the volume of the tumor. A relationship between the pure disease picture of adiposogenital dystrophy, on the one hand, and dwarfism and gigantism, on the other, is not absolutely necessary at the begining of the disease during adolescence and can be explained only indirectly by a simultaneous disturbance of the anterior lobe either after a diminished (hypoplasia, destruction) or increased function (adenoma, irritation by adjacent processes) of the glandular portion of the hypophysis; gigantism is explainable in addition by an early secondary insufficiency of the genital glands. The syndrome may also appear independently of the hypophysis through a direct lesion of the trophic centres lying on the floor of the third ventricle, namely, through encephalitic foci, immediately adjacent tumors which crush or destroy the centres (especially tumors of the hypophyseal duct), tuberculosis of the base of the brain, gummas and also trauma, and finally through congenital malformations. Every type of internal hydrocephalus may produce the syndrome by congestion from brain tumors or inflammatory hydrocephalus, namely, by pressure upon the hypophysis, by constriction of the secretory tracts running in the infundibulum from the hypophysis to the base of the brain, and by crushing or tearing of the basal centres. The development of the syndrome after acute infectious diseases, especially in infancy, is usually the result of serous meningitis and subsequent stasis of the spinal fluid. Migraine and other cerebral symptoms of angioneurotic irritation are often associated with the syndrome, either as the result of the stasis or as a cause of the same. The familial-hereditary appearance may be due to congenital hypoplasia of the hypophysis, congenital predisposition to idiopathic hydrocephalus, abnormalities of the skull, and also to cerebral malformations. A previously unknown syndrome is the simultaneous and also familial occurrence of optic atrophy with pigmentary degeneration similar to retinitis pigmentosa. polydactylism. obesity. and genital hypoplasia.

The röntgenologic criteria for adiposogenital atrophy are: the stigma of the intrasellar tumor at the sella; the stigma of the suprasellar tumor at the sella, possibly visibility of the tumor itself (calcium deposits); the stigma of the internal hydrocephalus at the sella, possibly with the simultaneous demonstrability of a brain tumor and generalized intracranial increase of pressure; abnormal height, steep descent and possible plumpness of the dorsum with an otherwise normal sella, and an abnormally small sella.

The centres for genital growth and for the regulation of the metabolism of fat apparently lie more or less distant from each other in the floor of the third ventricle, namely, the former more toward the hypophysis and the latter nearer to the corpora mamillaria in the tuber cinerum. Consequently isolated lesions of the one or the other may occur under certain circumstances.

Encapsulated Adenomata of the Thyroid.—J. L. DeCourcy (*Annals of Surgery,* January, 1924) presents an illustrated case and offers the following suggestion for operating: In order to overcome the difficulty of finding adhesions when opening from above I have devised the following technic. Instead of opening the capsule at the uppermost portion of the tumor, a small opening is made at the lower portion. The capsule is then separated from the gland and hemostats placed above and below the line of incision. The incision is carried up both sides from below until the adenoma is completely enucleated. The advantages are as follows: 1. Area of adhesion formation is avoided. 2. Hemorrhage is entirely controlled. 3. Capsule does not have to be trimmed away after removal of tumor. 4. Operation can be performed very much more rapidly. 5. There is less trauma.

Diagnostic Endocrine Clinic.—W. Engelbach (*Endocrinology,* May, 1924), discussed endocrine anomalies clinically at the First Annual Meeting, January 24, 1924, of the American Association for the Study of Goitre, at Bloomington, Illinois, in seven groups: 1. bilobar insufficiency of the hypophysis, presenting four cases of juvenile adiposity and emphasizing the diagnostic significance of the distribution of fat and the necessity of early treatment to prevent disastrous disturbances in later life in the sexual system; 2. thyropituitary (posterior lobe) insufficiency, diagnosed by overweight at birth, by retardation of dental development, of walking, and of speech; 3. thyropituitary (anterior lobe) insufficiency, lacking the adiposity of group II and showing physical underdevelopment; 4. thyroid insufficiency; 5. pluriglandular insufficiency with epilepsy, where the case presented demonstrated the relationship of the internal secretions to the eyes and to the teeth, as well as to the mental makeup or nervous system; 6, anterior lobe pituitary hypersecretion, which may stimulate overgrowth of the osseous system; 7. Raynaud's disease in a woman with secondary hypothyroidism as shown by a high basal metabolic rate, in spite of which she has been gaining in weight.

Secondary Operations for Goitre.—E. G. Blair (*Endocrinology,* May, 1924) is convinced that all goitres begin as colloid goitres. Proliferative forms are hyperplastic and therefore accompanied by at least some hyperthyroidism. One form of hyperplasia is always associated with exopthalmic goitre. With degeneration there seems to be formed an altered secretion extremely toxic to the heart and nervous system, and especially in old adenomatous colloid goitres. The author finds that secondary operation can be successfully performed, and should be performed when, if possible before, continued degeneration of tissue left at the earlier operation causes signs of thyrotoxicosis to appear. Three interesting cases of secondary total excision are related and it is shown that function may be maintained in such persons by continued thyroid and parathyroid medication.

Adrenalin in Manual Delivery of the Placenta.—R. Joachimovits (*Wiener Klinische Wochenschrift,* May 8, 1924) before introducing his hand into the uterus pours over it a solution one fourth or one fifth of one per cent. strong of adrenalin. This causes the blood vessels in the uterine wall to contract at once. The muscular tissue does not contract, but hemorrhage ceases promptly. Consequent on the constriction of the bloodvessels bacteria are unable to enter their lumena, and all danger of blood poisoning is removed.

Treatment of Basedow's Disease with Extract of Myxedematous Goitre.—Jaquerod (*Schweizerisch Medizinische Wochenschrift,* April 17, 1924) administered goitre extract in the form of tablets, two each day, accompanied by subcutaneous injection of serum from myxedema patients, for a period of fifteen days with a month's rest and then another fifteen day period of medication. The treatment caused throbbing to cease, reduced the cardiac pulsation, diminished the size of the gland in one patient, but not in a second one, and added to weight and general condition. Exophthalmos was not affected.

Radium Therapy of Thyroid.—F. H. Hagans (*Endocrinology*, May, 1924) has treated for four years with radium every case of goitre coming under his care. This included practically every known type. Forty-five per cent. have been benefitted, more than three quarters of whom he regards as cured. Only cases with hyperthyroidism experienced improvement; to those without it this treatment may indeed prove harmful. The gland, at best, was not completely reduced to normal size, since the secretory cells are partially replaced by fibrous tissues. A reduction of two and a half inches in the circumference of the neck was the average.

The author blocks out the neck in four squares, one over each lobe, one over the isthmus, and one over the thymus. Usually one hundred milligrams of radium are used, encased in silver tubes of half a millimetre wall thickness, screened with one millimetre of brass with two or three millimetres of rubber, and mounted on a block of wood about an inch thick. This is held in position with adhesive tape for four hours over each square. Subsequent treatments are given as indicated.

Surgery of the Thyroid.—J. L. DeCourcy (*Endocrinology*, May, 1924) finds fatigue an essential factor in the production of goitre and in the occasional recurrence of hyperthyroidism after operation. When the endurance capacity is exceeded suddenly the thyroid gland becomes activated to sudden hypersecretion, resulting in hyperthyroidism. If, on the other hand, the capacity is exceeded gradually, the gland change is apt to be by a gradual increase of the cellular elements and an adenoma develops.

In advanced goitre surgery offers the most logical treatment. The author's mortality in 1498 cases has been but little over one per cent. and he finds other objections to surgical treatment minimal. The failure of surgery to effect one hundred per cent. cure in thyrotoxicosis he attributes to failure to eliminate the primary cause of the pathology as well as the pathology itself. For this reason he establishes a postoperative régime whenever possible, endeavoring to keep the patient within the normal zone of endurance and so effect a complete cure.

Action of Iodine in Goitres.—N. Jagic and G. Spengler (*Wiener klinische Wochenschrift*, January 31, 1924), report that small doses of iodine, such as three drops of five per cent. solution of sodium iodide given three times daily and gradually increased, may bring about improvement in goitres with and without thyrotoxic symptoms and in cases of exophthalmic goitres, but they may also produce symptoms or increase existing symptoms. Consequently it should be given only under careful and individual observation of the patient. The thyrotoxic effect on the heart, the first signs of which may be hyperkinetic action and tachycardia, are to be feared. Hypotonia may also act unfavorably. As a rule, the diffuse goitres are more amenable to treatment than the nodular forms. However, unusual results are not to be expected from iodine therapy even with the most careful control and individual dose in all forms of goitre. But it is a fact that recurrent nodes promptly disappear after operation.

Goitre and Mental Diseases.—H. L. Foss and J. A. Jackson (*American Journal of Medical Sciences*, May, 1924). The close observation of about eight hundred goitre cases coming to a general hospital for treatment and the simultaneous study of fifty goitre patients among seventeen hundred inmates of a large hospital for the insane, both institutions in the same locality and drawing their patients from the same territory, lead us to draw the following conclusions:

1. That goitre is not, even in a goitrous district, especially common in the insane, rather the reverse, for its incidence in the State Hospital at Danville, Pa., is but three per cent.

2 Conversely, insanity is extremely rare among the large number of goitre patients applying for treatment in a general hospital in the same locality, there being no cases of true insanity among the eight hundred patients studied, the only mental disturbance being in the form of a mild excitement or rarely slight and transient mania, this in but two cases.

3. There is, apparently, no definite relationship between goitre and insanity and surely nothing to indicate thyroidectomy in the treatment of the usual insane patient suffering from complicating goitre, unless for the relief of mechanical pressure. Operation, of course, may be indicated if there be accompanying evidences of true hyperthyroidism, but this latter condition is most rare.

4. Neither hyperthyroidism nor hypothyroidism occurs, except very rarely, among the adult goitre patients of the Pennsylvania hospitals for the insane, the greatest number of goitres being of the socalled multiple adenomatous or nodular forms and unaccompanied by systemic disturbances.

Internal Secretion of the Testis.—Kenneth M. Walker (*Lancet*, January 5, 1924), draws the following conclusions from his studies: 1. That although the testis, through the medium of its internal secretion, exerts an important influence on the development of the secondary sex characters, it acts as a stimulus to their growth rather than as the source of their origin. 2. That the other organs of internal secretion, such as the pituitary and suprarenals, exercise a control over the development of the secondary sex characters which is only of less importance than that exercised by the testicle itself. 3. That the influence exercised by the various endocrine glands on the development of the sex characters differs in different animals and in the two sexes. 4. That the internal secretion of the testis is formed not by the interstitial cells but by the cells of the tubules. 5. That the interstitial cells store up nutritive material for the use of the tubules, their function being, therefore, trophic rather than secretory.

It is obvious that these conclusions have an important bearing on the organotherapy of the testis. If the internal secretion of the testis is only one of the factors regulating the development of the secondary sex characters it is obvious that too much must not be expected of treatment by the orchitic extracts or by testicular grafts in those cases of eunuchoidism in which deficiencies in the rest of the endocrine system exist. Moreover, if the interstitial cells do not form the internal secretion of the testis, the observation that they increase in number after the operation of vas ligature cannot be taken as a proof that the output of sex hormone has been correspondingly increased. In other words, if the function of the interstitial cells be trophic rather than secretory, the arguments in favor of Steinach's operation fall to the ground.

The Goitre Risk and Local Anesthesia.—John Hunt (*American Journal of Surgery*, January, 1924) advises the careful keeping of the anesthesia record as a valuable aid in anticipating impending shock. He prints several such records, composite and individual, and offers the following technic for the application of local anesthesia, with illustrations:

In a total of five hundred and forty-eight surgical goitres our records show a mortality within forty-eight hours following operation, in five cases. Of the total number, one hundred and eight had ether anesthesia, with a mortality in three cases; three hundred and six had local anesthesia, mortality in one case, and one hundred and thirty-four had a combination of local with nitrous oxide and oxygen, mortality in one case. In 1921, we discontinued using ether, having been convinced that local anesthesia, or local with nitrous oxide and oxygen, are much safer in goitre surgery.

The technic of our local anesthesia is a combination of nerve block and infiltration. Only nerves supplying the field of operation are anesthetized. All injections are made prior to starting the operation.

Having in mind an intended bilateral resection, in which case both sides are treated alike, the description will be limited to one side. Selecting three points of skin perforation, preliminary intradermal injections are made with a fine needle, followed by perforating stabs with a sharp pointed cataract knife, at these points. These skin perforations prevent pain when the larger infiltrating needle is used and does away with drag on the shaft of the larger needle, which makes available the sense of touch in directing the point of the larger needle through the underlying tissues of the neck.

Point 1.—Opposite the superior border of the thyroid cartilage at the posterior border of the sternomastoid muscle, an infiltration is made, superficial to the sheath of the sternomastoid muscle. Through this area passes the main trunk of the transversalis coli nerve to supply the skin from the level of the hyoid bone down to a level about an inch above the suprasternal notch.

Point 2.—At the middle, and external to the thyroid cartilage, the needle is directed to the external posterior border of the cartilage, and an infiltration is made around the superior thyroid pole. Two nerves are anesthetized, the nerve passing from the superior cervical sympathetic ganglion to the superior pole external to the anterior branch of the superior thyroid artery, and a nerve branch from the external division of the superior laryngeal nerve, which enters the gland capsule internal to the same artery. By blocking the sympathetic nerve, less shock is produced during operation manipulation. The branch from the superior laryngeal is essentially a nerve of ordinary sensation. When the infiltration has been faulty, at this point, we have observed that much pain is caused during manipulation of the upper part of a lateral lobe.

Point 3.—Between the borders of the sternomastoid muscle, about one finger breadth above the clavicle, the needle is directed forward under the skin, to make a subcutaneous infiltration below and parallel to the intended line of incision. This anesthetizes terminal nerve branches which come to the skin from below, just above the clavicle and upper border of the sternum.

Action of Physostigmine and Pituitrin.—D. G. T. Kerr Cross (*British Medical Journal,* January 5, 1924) states that his experiments on the isolated human appendix have shown that physostigmine and pituitary extract, when used in combination, evince a more powerful stimulating effect on the intestinal movements than either of these substances used alone. In the author's experiments this treatment has not failed in a single case except in the presence of unsuspected mechanical obstruction.

Pituitary Tumor.—William Engelbach (*Medical Clinics of North America,* March, 1924) remarks that the diagnosis of hypophyseal neoplasm ordinarily is made with ease in the classical, rapidly developing tumor producing very characteristic signs. In those cases, however, in which there is no sellar deformity, the diagnosis becomes very much more difficult and requires a careful differentiation from other lesions in the neighborhood of the peduncles, occipital lobe, and cerebellar region, particularly if the general hormonic signs are not absolutely characteristic. The typical ocular changes, however, combined with the very classical general hormonic signs, even without sellar deformity, are frequently sufficient in themselves for such a diagnosis. In the majority of these cases, if the opportunity for prolonged observation is afforded, deformity in the sella sooner or later is noted. Bilateral temporal hemianopsia is not always present and is obtained only at a certain stage of the course and hence it should be awaited for the diagnosis of pituitary neoplasm. Typical sellar deformity when present is often sufficient in itself for diagnosis. Another important differential diagnostic point is the long duration of the course of the pituitary struma, especially as compared with gliomas. Differentiation from occipital tumors rests to a large extent upon competent localizing ocular signs. Fixation of the pupil, central blindness, and changes in the macula lutea are very important. Other localizing signs referable to occipital tumor, such as localized pain, tenderness, pressure upon the cerebellum, etc., are of only insignificant aid. In all classical cases in which definite deformity of the sella turcica occurs, associated with ocular signs mentioned above and intracranial pressure symptoms, the diagnosis is positive. Diffuse intracranial pressure symptoms, with general hormonic signs indicative of pituitary disorder, are hardly sufficient for a positive diagnosis, as a great many of the ordinary pituitary disorders not having a tumefaction as their etiologic cause have this combination.

The indications for treatment in these cases depend upon the progression of the tumor at the time of observation. If the tumor has become stationary, particularly with cyst of the hypophysis, there is no indication for immediate interference. On the other hand, rapidly growing tumors with progressive ocular or sellar signs and evidence of increasing intracranial pressure, surgery is indicated. Possibly one exception to this rule are the cases with an unquestionable history and positive physical and laboratory signs of syphilis. These cases might be tried for a limited length of time on specific and x ray treatment (gumma of the hypophysis). If this treatment is ineffective within six or eight weeks, surgery should be considered. In those cases of rapid progression in which operation is refused, the only other treatment is irradiation with x rays and radium. Medical treatment has practically no field in these cases, except in a minor secondary rôle in those which show hyposecretion of one or both lobes.

One Year's Work with Thyroid Disease.—Frank H. Lahey (*Boston Medical and Surgical Journal,* January 31, 1924), finds that thyroid extract is contraindicated in toxic cases and prolonged iodine feeding may convert nontoxic into toxic goitre. Hyperthyroidism does not exist in the absence of increased basal metabolism rate and cures of hyperthyroidism are not accomplished without returns of basal metabolism rate to normal, provided there are no conditions other than a thyroidism elevating it. Basal metabolism readings are of great value in neuroses simulating thyroidism, in that the true basal metabolism rate in the neurosis is normal. Basal metabolism readings uncorrelated are not a reliable guide to the number and extent of operations a patient will stand. Minus degrees of basal metabolism rate may exist in patients free from clinical evidence of myxedema, yet made subjectively better by raising the rate to normal with thyroid feeding. Multiple stage measures are life-saving procedures in severe hyperthyroidism. Thyrocardiac cases first seen in decompensation may be restored to striking cardiac capacity if it is possible by thyroidectomy to remove the intoxication and to restore the heart rate to within normal limits. The most dreaded, uncertain and uncontrollable factor in the clinic today is mediastinitis. The moderate values of röntgenotherapy are more than outweighed by its advantages. Thyroid surgery done in a general surgical clinic equipped for the care and study of these cases will show failures to cure and a mortality rate rarely over, and in most cases under, one per cent.

The Goitre Problem.—J. L. DeCourcy (*International Journal of Medicine and Surgery,* April, 1924) discussed goitre from the following four aspects:

First, rapid increase of endemic or simple goitre in the United States.

Second, iodine as a possible prophylaxis.

Third, fatigue as a cause of goitre; overwork in adults; too strenuous exercise in schools, especially among girls.

Fourth, surgery, so far the best solution for caring for advanced goitre.

He emphasizes particularly the element of fatigue, pointing out the frequency with which goitre develops as a result of increasing one's activity above the individual norm. Whether this is due to an acidosis or to a gradually increased call upon the thyroid secretion the author is not certain, but states that the most logical way of accounting for the formation of an adenoma is a compensatory increase in cells in order to make up an existing deficiency. Every person has a normal zone of endurance which is individualistic in its characteristics. This zone may be decreased or increased by various factors, either external or internal. It may be decreased or increased normally only by changes gradually induced, and has a limit. If the zone has been exceeded suddenly, then the glands, whichever they may be, are activated to sudden hypersecretion, and if the gland be a thyroid, then hyperthyroidism suddenly develops. If, on the other hand, the zone has been exceeded gradually, then changes in the gland are apt to take place by a gradual increase of cellular elements and an adenoma results. In cases of lung tuberculosis, especially in the ambulatory type, we frequently see signs of hyperthyroidism. When these patients are placed at rest for a while, these symptoms disappear. What probably happens is that the tuberculosis has narrowed the patient's zone of endurance, and when she persists in doing the work which she was able to do when well, she exceeds her zone and the thyroid gland is activated to hypersecretion.

The chief criticism of thyroid surgery is that it is not a one hundred per cent. cure in thyrotoxicosis. This is so, I believe, because operative treatment, up to the present, has not been founded upon a definite etiology. In order to effect a complete cure, therefore, it is sufficient merely to remove the pathology, but we must also in our postoperative treatment attempt to eliminate the primary cause of the pathology. The discussion of the various phases of etiology of goitre which we have given lends itself admirably to a logical postoperative régime, keeping the patient well within her normal zone of endurance, insisting upon a certain amount of relaxation and recreation, changing occupation when thought advisable, overcoming constipation, etc.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, AUGUST 20, 1924

DIABETES

Effect of Insulin on the Sugar Content of Arterial and Venous Blood in Diabetes.—R. D. Lawrence (*British Medical Journal,* March 22, 1924) reports the following findings: 1. The normal postabsorptive difference in arterial and venous blood sugar, the venous being usually twenty to forty mg. less, is much reduced in diabetes. Higher venous than arterial figures may occasionally be found in severe diabetes. 2. Insulin increases the arteriovenous difference and approximates it to the normal. From this we may conclude that, whatever part the liver and other organs play, insulin acts largely in the muscles or general tissues.

Clinical Use of Insulin.—A. P. Thomson (*British Medical Journal,* March 15, 1924) states that the suitability of the patient for insulin treatment must be determined by a thorough clinical examination. There are cases of glycosuria in which death appears imminent from inevitable causes not connected with loss of sugar tolerance and which are unsuitable for this treatment. The use of insulin is imperative in cases of coma and of extreme wasting, when anesthesia and operation are necessary, in infections like pneumonia and tuberculosis and in young children. Patients with mild diabetes, whose condition can be controlled by reasonable dietary restrictions, do not require insulin. Insulin is recommended, in general, for every patient who cannot take the author's appropriate basal diet. Unintelligent patients are unsuitable for insulin treatment. Glycosuric patients must be carefully discriminated from mild diabetics. It is well to avoid insulin in some cases of high blood pressure, myocardial degeneration and nephritis, and possibly in the senile.

The general treatment includes, first of all, the education of the patient and instruction in the testing of the urine. All focal sepsis should be eradicated. Constipation should be corrected and young and nervous patients may be given bromides. The diet must be carefully regulated, mainly by trial and individualization. The essentials of the diet are: 1, tolerability according to the habits and desires of the patient; 2, sufficient caloric value—thirty to thirty-five calories to the kilogram of body weight for a man doing light work; 3, sufficient protein to maintain nitrogenous equilibrium—one to 1.5 grams of protein to the kilogram; 4, the total amount of glucose must be reduced to that which the body can utilize—the total glucose equals the carbohydrates plus 0.58 per cent. of the protein plus 0.1 per cent. of the fat; 5, the total fatty acid must not exceed the amount which can be absorbed without the production of acidosis—the fatty acid equals 0.9 per cent. of the fat plus 0.46 per cent. of the proteins. In each of the basal diets recommended, the protein is in the proportion of just over 1 gram per kilo of body weight.

If dieting alone does not control the condition, the patient should be treated in a hospital rather than at home. The proper control requires careful recording of the dose of insulin and the diet and the correlation of these factors with the observation of the urine and blood as regards sugar and acidosis. The first dose of insulin is calculated by dividing the average total number of grams of sugar excreted daily by three, which gives the number of insulin units for the daily dose—no more than twenty units total dose nor more than ten units to the single dose. The injections should be given before breakfast and before lunch if necessary. Relief from the socalled hypoglycemic crisis can immediately be obtained by the administration of sugar by mouth, or glucose intravenously. The latter is preceded by a hypodermic injection of a few minims of adrenalin.

Medicolegal Notes.

BASIS OF PHYSICIAN'S TESTIMONY AS TO PERMANENCE OF INJURIES.

The Circuit Court of Appeals, Sixth Circuit, Baltimore & Ohio R. Co. v. Mangus, 294 Fed. 761, states the general rule in personal injury cases to be that testimony by a physician as to the plaintiff's injury based on no objective appearance, but solely on plaintiff's statement as to the nature of the injuries, made in the course of an examination for the sole purpose of enabling the physician to testify, is incompetent; also, generally that an expert cannot be allowed to give his opnion based upon statements made to him by parties out of court and not under oath; and, generally, that an opinion based in any substantial degree upon subjective symptoms is inadmissible.

But a physician's testimony as to the injury and its probable permanence based on the plaintiff's statement of his history as far back to childhood as he could remember, covering his different diseases and the history of his accident, and containing no mention by the witness of plaintiff's narrative of his symptoms, and also upon a thorough examination, including blood pressure and all necessary adjuncts, to determine his condition, was not based on the history or on subjective symptoms to such an extent as to warrant an unqualified instruction to the jury to disregard it.

MALPRACTICE—EXCESSIVE VERDICT.

In an action for malpractice in rebreaking and resetting the bones of plaintiff's leg, which had not healed satisfactorily after a fracture, it was claimed that the defendant's alleged negligence resulted in two main injuries, failure of the fragments to unite and ankylosis of the ankle. The Minnesota Supreme Court held, Lorenz v. Lerche, 196 N. W. 564, that the recovery as to each must be supported by testimony of experts. In such a case the question put to a qualified expert should not call for his opinion as to whether the surgeon's treatment was proper or improper, but rather whether or not it was according to the customary and usual practice of the ordinary careful and skilled surgical practitioners of the same school in the community.

The experience of plaintiff's only expert witness was exceedingly limited, although he could qualify as such. He attributed the plaintiff's ankylosis, ulcers and the failure of the fractures to knit to defendant's neglect to open the cast when advised by the patient's complaints of severe pain and by the discoloration and coldness of the toes that circulation in some parts of the foot was impeded or stopped. The six experts for the defense, surgeons of long experience and high professional standing, differed from the opinion of plaintiff's expert. They all testified positively that pressure of the flesh below the fracture and resultant ulcers or sloughling would not prevent or retard the formation of a bony union at the fracture. Under this condition of the evidence it was held that the jury were not justified in finding that failure of the bones to knit was due to either the manner of the operation or the neglect to relieve from pressure.

The size of the verdict, $15,845, was held to indicate an award for all the consequences claimed in the complaint from the negligence, but the evidence was held so slight and doubtful as to the main bad result being caused by the defendant's negligence that, in the interest of justice, a new trial should be had, and the judgment for plaintiff was accordingly reversed.

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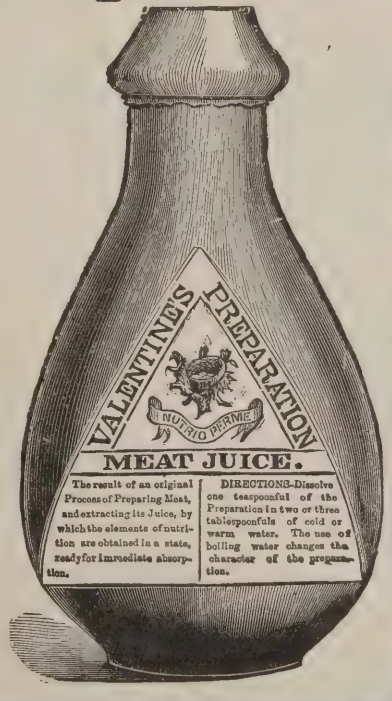
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Miscellany.

Smoke.—Every time a ton of coal is burned in the family furnace, seventeen tons of gas go up the chimney, sixteen of which are the gases of the atmosphere, either free or in combination with the elements of which the coal is formed. A little more than twelve tons are of nitrogen, which goes through the fire unchanged. Nearly four tons of oxygen are needed to burn the coal and this oxygen all goes up the flue as carbon dioxide, sulphur dioxide, and water vapor. Most of the coal, fifteen hundred pounds or so, also goes up the chimney, principally as carbon dioxide, less than one part in a hundred forming smoke.

French Use More Water.—M. Dienert, who has charge of the water supply of Paris, says that in 1911 one hundred litres of water for each person each day was commonly accepted as the minimum figure, whereas today it is set at two hundred and is constantly on the increase. He says that the war was responsible for many new sanitary measures that required more water, and the inhabitants never went back to their old ways. Figures relative to trade in soap between the United States and France do not throw any light upon the matter, for France sells twenty-five per cent. more of her own soap, and buys twenty per cent. less of ours today than in 1911.

Studying the Behavior of Malaria Mosquitoes.—Control of malaria is not always so simple as a statement of the essential facts would make it seem. . . . Variations in local conditions of mosquito breeding, in climate, in the character and distribution of populations, in occupations, in the nature of dwellings, in the presence of domestic animals, and in other factors create rather complicated problems which call for a combination of measures peculiarly adapted to each situation.

The International Health Board of the Rockefeller Foundation has been engaged in malaria control work since 1916. Special attention has been given to small towns and rural areas. . . . During 1923 special malaria investigations were carried on in the United States, Brazil, Nicaragua, Palestine, the Philippine Islands, Salvador, and Porto Rico. In connection with control measures in many parts of the United States incidental observations of importance were also made.

Drug Addiction on the Decline.—There are now probably not more than 150,000 addicts in the United States and their number is decreasing, says a report just published by the U. S. Public Health Service. This report is the result of a study of the extent and trend of drug addiction in the United States made by Dr. Lawrence Kolb and A. G. Du Mez, pharmacologist of the Public Health Service. It finds the peak of drug addiction was reached about 1900 when there may have been more than 250,000 addicts, and that the number is now steadily on the decline.

The estimate is based on the findings of numerous investigators and the report of physicians and of addiction clinics during the past 25 years. The highest estimate, made in 1915 gave a total of 269,000 victims. The lowest, based on the experience of the army draft figures, gives a total of 99,500. The former was made in the state of Tennessee and is believed to have been too high, since investigators found that there were proportionately more addicts in the South than in the North. The reasons for the conviction of the investigators that drug addiction is decreasing are given as the increasing efficacy of measures for the control of the drug trade, the prohibition of imports of smoking opium and the increasing caution exercised by physicians in prescribing habit forming drugs.

Estimates of the maximum total number of addicts are also derived from the known amount of drugs imported, and the report states: "To supply with their daily dose the large number of addicts asserted by some to be residing in this country would require enormous quantities of narcotics—quantities far in excess of those imported at the present time or during any period in the past!"

The period of the greatest importation of opium per capita was the decade ending with 1900. Assuming that all of it was used to supply addicts with either opium or morphine, the total number of victims could not have been more than 246,000. The report adds that the substitution of heroin for morphine would only increase this total by twelve per cent., and the imports of opium at present are less than one-fourth that of twenty-five years ago. The importation of smoking opium is forbidden.

As to cocaine, the report states: "The amount of cocaine produced in the world as well as that imported into the United States has always been small in comparison with opium. The number of addicts in the United States using cocaine alone, based on legitimate importation and assuming that all of the coca leaves and cocaine imported annually was used for the satisfaction of addiction, could never have been more than 18,300."

There are more addicts in prison at present compared with former years but this the investigators believe to be due to rigid enforcement of recent laws and not to any increase in addiction, since they hold that the present known importations are hardly more than the legitimate needs of medicine. Prison addicts are also thought to be due to the increase in the delinquent type of addict as compared with the normal individual who became an addict from medical use. Few cases of recent addiction, the investigators say, can be attributed to the prescribing of the drugs by physicians. Summing up, the report concludes:

"From the trend which narcotic addiction in this country has taken in recent years as a result of the attention given the problem by the medical profession and law enforcement officers, it is believed that we may confidently look forward to the time, not many years distant, when the few remaining addicts will be persons taking opium because of an incurable disease, and addict of the psychopathic, delinquent type who spend a good part of their lives in prison."

The League of Nations Interchange of Health Officers.—The International Health Board is providing the funds for a period of years to

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meet the expenses of this interchange of health officers.

"It is not enough," says President Vincent, in reviewing the work of the Foundation for the year 1923, "that many young workers should get a part of their training in foreign lands, and thus feel the stimulus of contrasts and of generous rivalry. Older persons, already in important official positions, need experience abroad, the chance to make comparisons, to get new ideas, to meet colleagues, to feel a sense of comradeship across national frontiers. It was a happy idea of the health section of the League of Nations to establish what are termed interchanges of health officials, or international institutes, which are attended by representatives of several countries.

"Two such institutes were held during 1923. Early in the year twenty-nine health officers from Austria, Belgium, Czechoslovakia, Denmark, Finland, France, Hungary, Italy, Japan, Norway, Poland, Rumania, Russia, Sweden, the United States, and Yugoslavia assembled in London. After a preliminary study of the English system of central and local health administration the party broke up into small groups which proceeded independently to an intensive study of health conditions and organization in some large provincial city, a county, typical agricultural and industrial districts, and a large port. After three weeks in the provincial areas and another week spent in studying the special health problems of London, the group went to Austria, where a similar program was carried out.

"The other session assembled in the United States in September. Twenty-five delegates represented eighteen countries, including four which are not members of the League—Germany, Mexico, Russia, and the United States. After general sessions in New York and Washington the party was divided into sections which studied health activities in typical city and rural areas in Virginia, Alabama, North Carolina, Pennsylvania, New York, and Massachusetts. A final conference of the European delegates was held in Geneva for a review and discussion of their experience in the United States.

"The value—scientific, practical, and international—of such meetings as these is unquestionable. The by-product in friendliness and good will is by no means negligible.

"Still other migrations of scientific men took place under the Foundation's auspices during 1923. Twenty-four specialists in medicine, public health, or physical science, representing seven different nations, visited other countries than their own as guests of the Division of Medical Education, the China Medical Board, and the International Health Board. These visits varied in length from a few weeks to several months.

"A commission of six distinguished Japanese scientists—two professors of medicine, two of pathology, one parasitologist, and one surgeon—made a tour of the chief medical centres of the United States. . . . Other visitors from foreign countries included: a health official from Hungary; another from Poland; and two professors of the medical school of the University of Hongkong, appointees to new university chairs which had been endowed by the Foundation.

"From the United States, on the other hand, the Foundation sent one pathologist to Brazil, another to Siam, physicists to Chinese universities in Nanking and Tientsin, and a specialist in science teaching to the National Education Association of China. To the Peking Union Medical College went eight visiting professors; two from Johns Hopkins Medical School, two from the Harvard Medical School, and one each from Columbia University medical school, the Rockefeller Institute for Medical Research, the University of Vienna, and the Central Institute of Brain Research in Amsterdam."

Noxious Drugs.—Dr. W. M. Bayliss, professor of physiology at London University, and Dr. C. W. Salesby have sent the following letter to the public press: "In previous letters we have sought to draw attention to the existence of effective substitutes for cocaine and to the principle that the only means whereby the traffic in noxious drugs can be stopped is by international action for the restriction of their production strictly to the quantities needed for legitimate medical and surgical purposes. On March 5th a committee of experts is to meet in Geneva to prepare the program for the International Conference under the auspices of the League of Nations, in November next. The program must deal not only with the manufacture of alkaloids, but, as has been urged previously, and as urged by the American Delegation on this subject, with the growth of the opium, poppy and coca plant. We hope that Sir John Jordan, who will represent Great Britain at the meeting of experts in March, may receive the most ample and cogent instructions to support this fundamental and alone effective principle of international control of production of noxious drugs.

Results of the Quarantine Conferences.—The *Star and Herald*, the English newspaper of Panama, in its issue of March 1, 1924, comments editorially as follows:

Our esteemed colleague of *La Estrella* (a Spanish journal) has called the conference of quarantine officials that has just closed in this city, a real and practical kind of Pan-Americanism, and he is right. Pan-Americanism has been largely a theory and sweet dream expounded at dinners and seldom tested practically.

The conference of quarantine officials of our neighboring countries, together with our own eminent members of the medical profession and the medical officers of the Panama Canal, has been a real advance in Pan-Americanism. Naturally there were many theories expounded in the conference, but they were quarantine theories, and even on that score the conference was extremely practical.

Here on the Isthmus of Panama many of the theories of quarantine have been tried out actually and practically, and some of them discarded and others justified. It was refreshing to note that the spirit of the conference was liberal and the conferees seemed more inclined to lessen quarantine restrictions than to set up new and unnecessary barriers. . .

That has been the attitude of the officials of the Panama Canal, led, we believe, by that liberal and progressive officer, Dr. W. C. Rucker, to whom we are in a large sense indebted for the suggestion to President Porras to call the convention here. And we feel that Dr. Rucker has given the best of his considerable ability and energy to make the conference the unqualified success it has proven.

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New Biological Station in Canal Zone.—The wild, virgin jungle of Barro Colorado Island, in Gatun Lake just off the steamship channel of the Panama Canal, will soon be the centre to which scientists seeking the secrets of little known animals and plants will flock. Construction of a biological station on that island has been begun by the Institution for Research in Tropical America, in which over twenty of the leading museums, societies, and universities of the United States are co-operating, Dr. A. S. Hitchcock, chairman of the executive committee of the organization, announced recently at the Smithsonian Institution in Washington.

The island was created by the formation of Gatun Lake in the building of the Panama Canal. It was one of the high spots in the tropical jungle which was submerged to make the lake, and contains over three thousand acres. As the waters arose in the lake, the forest animals took refuge on it in unusual numbers. Many jaguars, tapirs, and other large animals are known to exist on Barro Colorado, which is also an insect paradise and extremely rich in plant material.

Last June the government set the island aside as a reservation for biological research. No hunting, tree cutting, or settlement is allowed on it. The Institution for Research in Tropical America has been given custody of it and is now proceeding to erect a laboratory, where biologists, entomologists, zoologists, and botanists may find shelter for their apparatus and a place to set up their cots. James Zetek, of the United States Department of Agriculture, is serving as the local custodian of the station.

Barro Colorado is only a mile and a half from Frijoles Station on the Panama Railway ten miles from Gatun and ten miles from Gamboa. But although easy of access, the scientists working at the laboratory will literally have the wild at their door. Within a few feet of the station now under construction there is abundance of unstudied plants, animals, and insects. The building will be screened and protected against the wood eating ants which abound in the tropics.

Not only has this government recognized the importance of Panama as a field for biological study, Dr. Hitchcock said, but the Republic of Panama also recently set aside a beautiful site for a Marine Biological Station on the bay front in the modern section of the City of Panama, next to the site of the Gorgas Memorial.

The Institution for Research in Tropical America operating the Barro Colorado site was initiated by the National Research Council and is an association including representatives of the American Anthropological Association, American Museum of Natural History, American Phytopathological Society, American Society of Agronomy, Brooklyn Botanical Garden, California Academy of Sciences, Carnegie Museum, Commercial Museum of Philadelphia, Ecological Society of America, Harvard University, Indiana University, Johns Hopkins University, National Geographic Society, New York Academy of Sciences, New York Zoological Society, University of Michigan, Philadelphia Academy of Sciences, Smithsonian Institution, Yale University, University of Florida, American Genetic Association, and the National Research Council.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

DIE ANGINA PECTORIS. Von Dr. med. Oskar Burwinkel. Halle a. S.: Carl Marhold, 1924. Pp. 30.

PSYCHOLOGY OF LAUGHTER AND COMEDY. By J. Y. T. Greig, M.A. New York: Dodd, Mead and Company, 1923. Pp. 298.

CLINIQUE MEDICALE DES ENFANTS. Affections de L'Appareil Respiratoire. Par P. Nobécourt. Paris: Masson et Cie, 1924. Pp. 348.

DYSPEPSIA AND ITS SELF-TREATMENT. By Jadu Nath Ganguli, B.A., M.B. Benares: M. B. Nath, Biswanath Printing Works, 1924. Pp. 218.

THE CARRIAGE OF PHILANTHROPY. American Relief Administration Bulletin, Series 2, No. 43. By "One Who Served." Frontispiece and Sixteen Illustrations.

MORTALITY STATISTICS, 1921. Twenty-second Annual Report, Department of Commerce, Bureau of the Census. Washington: Government Printing Office, 1924. Pp. 774.

PHYSIOPATHOLOGIE DE L'APPAREIL DIGESTIF DU NOURRISSON. Par Enrique Suner. Préface du Pr. Nobécourt. Traduction du Dr. Mathé. Paris: Masson et Cie, 1924. Pp. 89.

CLINICAL ASPECTS OF THE ELETROCARDIOGRAM. A Manual for Physicians and Students. By Harold E. B. Pardee, M.D. With fifty-six Illustrations. New York: Paul F. Hoeber, Inc., 1924. Pp. 222.

SOME APPLICATIONS OF PSYCHOANALYSIS. By Dr. Oskar Pfister. Authorized English Version. New York: Dodd, Mead and Company; London: George Allen & Unwin, Ltd., 1923. Pp. 352.

STRAHLENBEHANDLUNG BEI KINDERKRANKHEITEN. Von Prof. Dr. W. Birk und Dr. L. Schall. Mit 13 Figuren im Text und auf 2 Tafeln. Berlin und Wien: Urban und Scharzenberg, 1924. Pp. 77.

DOMICILIARY TREATMENT OF PULMONARY TUBERCULOSIS. By F. Rufenascht Walters, M.D., B.S., M.R.C.P. Lond., F.R. C.S. Eng. Second Edition. New York: William Wood and Company, 1924. Pp. 288.

ANESTHESIA. By James Tayloe Gwathmey, M.D. With Collaborators on Special Subjects. Illustrated. Second Revised Edition. New York and London: The MacMillan Company, 1924. Pp. 799.

EAT YOUR WAY TO HEALTH. A Scientific System of Weight Control. By Robert Hugh Rose, A.B., M.D. New edition, thoroughly revised and enlarged. New York: Funk and Wagnalls Company, 1924. Pp. 230.

INSANITY IN EVERYDAY PRACTICE. By E. G. Younger, M.D. Brux., M.F.C.P. Lond., D.P.H. Fifth Edition, Revised and Edited by G. W. Smith, O.B.E., M.B., Ch.B. Edin. London: Ballière, Tindall and Cox, 1924. Pp. 134.

FORTSCHRITTE DER SEXUALWISSENSCHAFT UND PSYCHANALYSE. Herausgegeben von Dr. Wilhelm Stekel, redigiert von Dr. Anton Missriegler und Dr. Fritz Wittels. 1 Band. Leipzig und Wien: Franz Deuticke, 1924. Pp. 420.

EL PROBLEMA DEL CANCER. Por William Seaman Bainbridge, A.M., Sc.D., M.D., C.M., LL.D. Apendice: La Terapeutica Fisica de las Neoplasias Malignas. Por el doctor Vicente Carulla Riera. Barcelona: Cervantes, 1924. Pp. 646.

OPERATIVE SURGERY. Volume 4. Covering the Operative Technic Involved in the Operations of General and Special Surgery. By Warren Stone Bickham, M.D., F.A. C.S. With 772 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 842.

PERKUSSION, AUSKULTATION UND PALPATION DER BRUST-UND BAUCHORGANE. Ein praktischer Grundriss. Von Dr. L. Dünner und Dr. R. Neumann. Mit einem Vorwort von Geh. Med.-Rat Prof. Dr. Georg Klemperer. Mit 5 Abbildungen im Text. Berlin und Wien: Urban und Schwarzenberg, 1924. Pp. 154.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 5 NEW YORK, WEDNESDAY, SEPTEMBER 3, 1924 WHOLE No. 2288

Our Northern Chronic Dysenteries

*Their Etiology, Diagnosis and Treatment**

WALTER A. BASTEDO, M.D.,
New York

In a case of chronic diarrhea a history of blood and mucus in the stools suggests dysentery, but we do not know its real nature until further study. Should the patient come from a southern country we make a careful and repeated search for animal parasites, such as Amebæ, Giardia, Balantidium, Bilharzia and others, but in persons who have always remained North we should be equally on the alert for protozoal infections. In 1894 Stockton reported two cases of amebic dysentery from Buffalo and in 1909 Patterson reported five cases of amebic dysentery from New York and found records in the literature of some fifty more cases in persons who had never been South. In the past two years we have had at St. Luke's Hospital two more such cases. Giardia dysenteries also, though usually from tropical countries, have arisen in New York, have been reported from several northern states, and during the late war occurred in considerable numbers in soldiers in the trenches and in those invalided home to England from Flanders and France. Other protozoal dysenteries in patients living North have been reported by several authors.

Bacillary dysentery also is not necessarily a southern disease, for in acute epidemics it is exceedingly common in northern countries even in winter, and it goes on to chronicity in a certain number of the cases. It is probable that if properly tested out many of our cases of chronic dysentery will prove to have their origin in such specific bacillary infection.

MICROBIOLOGY

The specific infections are caused by protozoa such as Amebæ, Giardia (lamblia) and others, by one or other strain of dysentery bacilli such as the Shiga, Flexner, Hiss-Russell and Mt. Desert, by the tubercle bacillus, the syphilis spirochete and the gonococcus. In socalled ulcerative colitis the etiological germ has seldom been determined, yet the colon bacillus, the Bacillus aerogenes capsulatus and other anaerobes, the enterococcus, the hemolytic streptococcus, strains of streptococcus viridans and possibly yeasts have proved bad actors in some cases, though all of these germs are ordinarily saprophytic and harmless and are not infrequently found in normal stools.

That the colon bacillus may produce a serious colitis was brought to our attention by Bassler in 1911, and we have had cases which we believed in this class. Others have reported cases due to Welch's bacillus, the aerogenes capsulatus. In a number of our cases the enterococcus, which is usually negative intracutaneously, reacted violently and was apparently an etiological or contributing factor. Such enterococcus dysenteries have been abundant in France and were encountered in considerable numbers in the late war. The yeasts, of special interest to us since our sprue studies (published elsewhere), have been present in abundance in some of the bad gaseous types. Davison states that the streptococci are thought to be not causative, yet this cannot be considered proved, and Herter and others believe them etiological. Undoubtedly in many cases they are more or less responsible for the seriousness of the illness and its prolongation, and this is especially true of the dysenteries caused by chemical irritants such as mercury bichloride. In one acute case resembling typhoid we found a pure culture of an unnamed streptococcus in the duodenal contents, and later this organism predominated in the stools. Weiss described an acute dysenteric outbreak apparently due to an unnamed micrococcus. If the cocci can produce acute bowel infections, it is not improbable that they can cause chronic ones.

DIAGNOSIS

During the past year the cases sent us with the diagnosis of dysentery include one of tropical sprue, two of cancer of the rectum, one of cancer of the sigmoid flexure, and two of multiple polypi of rectum and colon. We have had one case of amebic colitis in a longshoreman who has never been outside of New York city, and one case of tuberculous colitis in a lady of fifty-five years who never at any time had shown signs of active pulmonary tuberculosis. The diagnosis in the last named was based on the presence of tubercle bacilli in mucus obtained from the surface of a rectal ulcer.

To illustrate diagnostic methods we will cite a case:

*Read before the Medical Association of Central and Western New York, Syracuse, October 25, 1923.

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Case I.—Two years ago, two weeks after an operation for appendicitis and while still in the hospital, a boy of thirteen manifested fever and diarrhea with blood and mucus in the stool. After recovery from the acute attack the loose and frequent stools continued with considerable mucus and frequently blood, but he attended school with fair regularity. When we saw him he was very thin, had a hemoglobin of 48, some colic but no noteworthy abdominal tenderness, and loose stools, two or three in the night and five or six in the daytime. His appearance suggested tuberculosis. The sigmoidoscope revealed a granular upper rectum which bled at the touch of the instrument, and the mucus obtained through the sigmoidoscope was negative for amebæ and other animal parasites and the bacillus tuberculosis. The stool was negative for ova and parasites but gave positive cultures for paratyphoid B, enterococcus, Bacillus coli communis and Bacillus coli communior. His serum, however, did not agglutinate paratyphoid B or the Shiga, Flexner, Sonne A and Sonne B types of dysentery bacillus, but it did agglutinate the Mt. Desert dysentery bacillus in all dilutions up to 1 in 320. Intracutaneous tests were likewise negative to typhoid, paratyphoid A and B, enterococcus and Bacillus coli communis; however all the dysentery bacilli strains gave decided skin reactions, that of the Mt. Desert being the most pronounced and the most prolonged. Two antiforminized stools injected each into three guineapigs did not produce tuberculous lesions. The duodenal contents were negative bacteriologically. This is apparently a case of true dysentery of the Mt. Desert type, though repeated stool cultures have not shown the Mt. Desert bacillus. In the chronic bacillary cases it is rare to obtain a positive dysentery bacillus culture, yet treatment by stock vaccines as directed by agglutination tests has proved successful. (Since this paper was written intravenous doses beginning at 20,000 of a stock Mt. Desert vaccine have been followed by great improvement, though the stools are not formed.)

METHODS OF DIAGNOSIS

The sigmoidoscope.—This instrument enables us to see lesions in the rectum or pelvic colon in almost all forms of dysentery. We have rarely seen a case of amebic, bacillary or tuberculous dysentery without rectal involvement. It will also expose a syphilitic or a gonorrheal infection, or reveal the presence of carcinoma or of papillomatous growths. In carcinoma it is characteristic that the mucous membrane is normal practically up to the projecting growth. Syphilitic lesions are not likely to be mistaken for dysenteric, but they may be indistinguishable from carcinoma and are dependent for their final determination on the positive Wassermann reaction, the examination of scrapings from the ulcer and the results of antiluetic treatment. Gonorrheal infection shows by a pus exudate corresponding in appearance with that of gonorrheal urethritis and containing gonococci.

In the ordinary types of dysentery the rectal inflammation may be nonulcerative or ulcerative. In the former the whole mucous membrane is seen to be swollen, rather dry and friable. In the latter it may show extensive ulceration with islets of mucous membrane standing out like sessile polypi, or several discrete scattered ulcers with comparatively little inflammation in the intervening areas. These ulcers are surrounded by a narrow red areola, have raised edges which are not undermined, and are covered with mucus or a yellow slough very difficult to remove. Even in amebic dysentery in our experience the rectal ulcers seem as a rule not to be undermined.

In one group the site of the lesions as revealed by the sigmoidoscope is the pelvic colon only or the pelvic colon and upper rectum, in which case there is neither tenesmus nor especial tenderness to digital examination or the insertion of the sigmoidoscope. In the other group the lesions are in the whole rectum. If the inflammation or ulceration reaches the anal canal there is tenesmus, and the instrument can be inserted only after a local anesthetic. We formerly used cocaine, but now find that we can usually depend on a five grain anesthesin suppository inserted half an hour before the examination. In hemorrhagic proctitis or proctocolitis there is free blood in the rectum and the walls bleed very freely at the touch of the instrument.

Microscopic examination and cultures.—Mucus obtained through the sigmoidoscope directly from lesions is ideal for the study of fresh or stained specimens under the microscope and for cultural study. Tissue scrapings may also be cultured. For amebæ the fresh specimens are examined on the warm stage, but for the other protozoa the warm stage is unnecessary (Davison). Tubercle bacilli show by staining methods, but since they are to be found in the stools of those with pulmonary tuberculosis it is especially necessary that they be obtained in mucus taken directly from an ulcer. For suspected tuberculosis where there are no lesions in the rectum some have antiforminized the mucus and injected guineapigs; but after the use of many guineapigs, experimenting with suspected tuberculous stools and with normal stools to which known active tuberculous sputum has been added, we have concluded that antiformin sufficient to clear the stool will kill the tubercle bacillus, therefore the method is worthless. For Bacillus aerogenes capsulatus (Welch's bacillus) we make anaerobic cultures. In chronic bacillary dysentery we seldom obtain positive cultures, though these patients react violently to one or other stock strain of dysentery bacillus when injected intracutaneously.

One may also use for microscopic study or culture the mucus from a stool or that obtained by colon irrigation after it has been washed with normal saline. When obtainable we prefer mucus rather than feces, for it is to be remembered that we are looking for an infection of the wall of the gut and not of the feces; and mucus, particularly if it is bloody, would seem in all probability to come directly from the inflamed wall.

Agglutination and intracutaneous tests.—The mere predominance of one type of germ does not determine that that is the infecting one, so that for the ultimate determination it is necessary to do agglutination tests with the patient's serum, or at least to make skin tests with vaccines prepared from the various germs isolated. For this latter purpose, having abandoned scratch dermal tests for bacterial types, we inject intracutaneously 1/100 c. c. of a one per cent. suspension of killed bacteria, this amount representing approximately 25 to 100 million dead

germs, according to the kind of germ. Agglutination tests are probably more reliable than skin tests, for it must be understood that while on the one hand the absence of a skin reaction to an autogenous vaccine is taken to mean that the disease is not due to the germ represented in the vaccine, on the other hand a positive reaction means merely that the patient is susceptible to the germ, and is not necessarily suffering from infection by it. For the dysentery tests we obtain stock vaccines of the several dysentery strains from the Department of Health. As stated by Davison, the agglutinability of living cultures has frequently been noted to vary, while that of cultures killed by formol is constant, therefore tests with the latter are more reliable.

The Röntgen ray.—This may be helpful by demonstrating the presence of a tumor such as carcinoma or hyperplastic tuberculosis. In colitis cases it shows absence of or small haustrations in the involved part of the colon, and sometimes distortion of the wall. It may reveal the site of ulceration by spasm or the rapid passage of the barium past a given spot. If the barium meal reaches the cecum in less than three hours it suggests that in all probability the ileum is also involved (Hurst), a complication that is serious.

TREATMENT

Though in the North we encounter a few chronic cases of the specific protozoan and bacillary types of dysentery, some endemic and some from southern regions, the vast majority of our northern chronic dysenteries are cases of colitis and proctitis which are for the most part unclassified etiologically. We shall therefore not linger over the specific treatment of the dysenteries due to amebæ and other protozoa, syphilis and gonorrhea.

Nor need we dwell at length on the treatment of the tuberculous dysentery cases, for as a rule they also show pulmonary tuberculosis for which they are undergoing treatment. Some of them have improved wonderfully under the application to the abdomen of heliotherapy or the rays of the Alpine lamp (Mayer), and some have seemed to improve under intravenous calcium chloride.

But for all types of chronic colitis the general treatment may be discussed at length. They may prove obstinate cases to treat, and are often thought cured when the disease is only quiescent. We may see these patients first during an acute exacerbation when they are very ill, and then they should have treatment for acute dysentery which we shall not outline here. But we see many for the first time when they are able to be up and about or have been ill for a long time, and for these primarily we should endeavor to insure adequate sleep, sufficient food and freedom from intestinal putrefactive toxemia, as otherwise they rapidly lose flesh and strength.

Vaccinotherapy.—The finding of a specific germ by culture and agglutination tests calls for the use of a vaccine. None of us feels that vaccines alone will cure a chronic case, but if by gradually increasing the resistance to the offending germ they help us to the extent of only five or ten per cent., it may be that that small percentage of assistance is just what is needed to enable the patient finally to overcome the infection. We have a feeling that perhaps vaccine reports will be better than heretofore if we limit the vaccine employed to such autogenous stool germs as give marked agglutination and skin reactions, and include all such germs in our vaccine. All vaccines should be continued for many weeks or months.

In a chronic bacillary dysentery in which the bacterial agent was recognized at the outset or the type is proved by agglutination or intracutaneous tests we may use a stock vaccine of the specific germ if we are unable to obtain an autogenous one. The vaccine is usually given subcutaneously, but in bacillary dysenteries Nolf obtained far better results from their intravenous administration. He gave doses subcutaneously till a systemic reaction was obtained, and then administered one one thousandth of this amount by vein. He gave a dose every four days with rapid increase in the amount, for example, the first dose 10,000, the next 30,000, 50,000, 100,000, 200,000 and so on. This method we have recently adopted, but because of the frequency of chills never give more than 10,000 for the first dose no matter how many can be taken subcutaneously without reaction.

Serotherapy.—In the bacillary chronic dysenteries polyvalent serum has occasionally been of great value, but as a rule it has failed to prove helpful.

Rest and activity.—Patients in a state of exhaustion and especially if losing much blood should be kept in bed, though as soon as possible they may be allowed to use the toilet, at first a commode alongside the bed. But when they are not so ill the bed is not only not necessary but is devitalizing and it is better to have them up in a sun parlor or out of doors or going about. On no account should they undertake any activity which will leave them fatigued.

Warm clothing is advisable, as a surface chill may produce exacerbation even after years. A flannel covering for the abdomen would seem to be a good addition to the clothing.

Climate.—A warm sunny climate in the winter permits the patient to be out of doors and in so far is beneficial. Hot humid climates should be avoided. Otherwise climate seems to make very little difference.

Diet.—This should be as liberal as possible, but limited in those foods, i. e., flesh and eggs, as are most likely to produce food poisoning and intestinal putrefaction, for these patients are very susceptible to such. Unless the ileum is involved the food may be well digested, so that many of these patients maintain a fair nutrition, have a good appetite and rebel against any marked dietary restrictions. If, however, there are serious digestive disturbances with anorexia the loss of flesh is rapid. For persistent anorexia lavage followed by the introduction of peptonized milk through the tube may be a good procedure.

In the Giardia, sprue and aerogenes capsulatus types there is some evidence that a high protein low carbohydrate diet is the best. But this is not true of the usual cases. The food should be in fine subdivision and not of the roughage type. Milk if well borne should form a considerable portion of it, but unfortunately in many of these cases causes severe diarrhea. We have had a number of patients who were relieved from their cramps and diarrhea by a change from a strict milk diet to heavier foods. Oc-

casionally dried or malted milk is better borne. The fermented milks, though they seem to have proved curative in children, have shown no such advantage in adults. They may be used as foods if the patient prefers them or if they agree better than raw milk. In these cases we have had no experience with acidophilus milk. Fruit even in purée form and heavy fats such as codliver oil are as a rule badly borne. Ice cold food should be avoided. When there is much loss of water in the stools water should be taken in large quantities to prevent dehydration.

For severe anemia and emaciation we rely on one or more transfusions, a treatment that may also enhance the patient's ability to overcome the infection. In addition we use iron hypodermically or by mouth, but as a rule avoid arsenic because of its possible bad effect on the bowel.

For pain our internal remedies are codeine, morphine, opium, belladonna or atropine, and benzyl benzoate. The last will check cramps if given in doses of one or two drams of the twenty per cent. solution, but its effects last only two or three hours. Abdominal hot compresses or packs, the hot water bag or hot colon irrigations are sometimes very comforting.

To check the diarrhea a simple preparation of a bismuth salt with paregoric and chalk mixture given every two to four hours is sometimes effective, or even bismuth alone. The bismuth salts are not astringent but serve as protectives to the wall of the gut. Astringents such as tannalbin and tannigen have proved very mild remedies in our hands even in very large doses frequently repeated. Codeine is sometimes helpful and is particularly effective when a nervous diarrhea accompanies the chronic state. But at times morphine or opium in considerable doses is required. The night diarrhea is the most difficult to combat and the most destructive to the patient as it causes loss of sleep. In some cases we have been able to overcome this by an anesthesin suppository or by a colon irrigation at bedtime, but sometimes it requires a large dose of opium. There are cases in which it may be unwise to check the diarrhea, but this is more true of the acute necrotic cases than of the chronic cases and we have not seen any chronic case that did not seem better when the diarrhea was held in check. As a matter of fact continued diarrhea readily saps the strength of the patient. We have tried vegetable charcoal and purified animal charcoal (℥ss) and kaolin (℥iv) without any apparent lasting good result.

To cleanse the bowels.—Some of the chronic dysentery patients are decidedly constipated and must have laxatives, such as the comparatively unirritating salines or mineral oil. But in the diarrhea cases also the repeated diarrheal movements often fail to remove their own irritating cause, and in this event much good results from an occasional cleansing cathartic dose. Some give calomel, castor oil, mineral oil or salts daily, or in small doses several times a day; but in our experience such frequent cathartic medication in a chronic diarrheal case is not only not beneficial but may seriously weaken the patient.

It is our practice to give castor oil, or occasionally calomel, once or twice a week or even less often, and we feel that it does much good. Indeed, patients themselves frequently recognize the beneficial action, and somtimes after a week or so will ask for another dose. We have repeatedly used transintestinal lavage with two per cent. sodium sulphate through a duodenal tube but have not been pleased with the results. In the cases with severe proctitis we have thought that our best results came from mouth doses of magnesium or sodium sulphate every two or three days.

TREATMENT BY RECTUM

When there is no proctitis we give cleansing irrigations of plain water or sometimes saline every day or every two or three days, or slightly astringent irrigations of silver nitrate beginning at 1-5,000 and increasing to 1-1,000. We do not believe in the introduction of irritating solutions. Even silver nitrate, 1-1,000, potassium permanganate, one grain to the pint, hydrogen peroxide or weak Dakin's solution may produce cramps. The utter impossibility of sterilizing intestinal loops has recently been shown by Dragstedt, Dragstedt and Nisbet, who placed in the loops ether, seventy per cent. alcohol, two per cent. lysol, five per cent. silver nitrate, a saturated solution of zinc chloride, five per cent. phenol, a saturated solution of salol, ten per cent. thymol in alcohol, solid camphor, menthol, naphthalin, beta-naphthol, Dakin's solution, a saturated solution of quinine sulphate, and mercuric chloride the strength of which is not stated, and failed to obtain sterilization. These remedies do more harm to the tissues of the patient than to the bacteria. The much employed argyrol is mildly antiseptic, but it is not astringent and is probably harmless. We have a new hope in the use of the acridine dyes, rivanol and acriflavine, and gentian violet. Churchman recommends acriflavine for gram negative germs and gentian violet for gram positive germs, the solution containing 1-4,000 of each. Our experience is too limited to permit a report on these dyes at present.

Better than antiseptics for the intestinal wall is probably the removal of the mucus under and in which the bacteria collect and multiply. And for this nothing would seem to surpass properly given colon irrigations with plain water using several gallons at a time, and an occasional dose of castor oil. At times we use sedative instillations of a pint or two of starch water or warm oil to be retained as long as possible. We avoid rectal injections at bedtime as they keep the patient awake.

When there is proctitis we are very careful in the introduction of tubes or instruments not to injure the mucous membrane. With a soft rubber ear syringe or a catheter and funnel we insert warm oil (℥iv) containing bismuth subcarbonate (℥iii) to be retained as long as possible, or we give small enemas of starch water. We also insert from one to three times daily a five grain anesthesin suppository. In refractory cases we insufflate calomel or equal parts of calomel and bismuth subnitrate as advocated by Soper. We have seen more harm than good from the application to rectal ulcers of silver nitrate either in stick or solution, though on occasions this may be tried in long standing cases.

SURGERY

In refractory cases surgery may be employed, the operation being for one of two purposes, namely, either to sidetrack the intestinal contents from the

diseased area, or to make an opening through which cleansing or medicated solutions may be introduced into the colon. The artificial anus to sidetrack the colon is theoretically the best operation as it keeps all food residues and feces away from the diseased colon. Yet it creates a bad odor about the patient, must be kept open a long time, and gives much trouble, consequently is used as a late resort. Therefore surgery is usually confined to an appendicostomy, or if this is impracticable, to a cecostomy, through either of which are introduced salines, antiseptics, oil, starch water, and ipecac in the amebic cases.

In sixty cases of socalled ulcerative colitis Mummery reports thirty-three patients treated medically with twenty-six deaths, and twenty-seven operated upon with only six deaths. In 1919 Logan summed up the results at the Mayo Clinic. Fifty-one patients were operated upon with an immediate mortality of 11.8 per cent. and an ultimate mortality of 27.5 per cent. Four patients later reported no improvement and twenty reported improvement. In only seven cases had the patients improved sufficiently to permit of closure of the opening within fourteen months.

The surgical literature is full of reports of success with appendicostomy or cecostomy, but because of lack of success we have resorted to it in very few cases. In our first two the operative mortality was one hundred per cent. In our next three the patients seemed to gain nothing. Since then though we hold an open mind on the question we have not advised the operation. We have treated a number in which the opening had been in daily use for from one to three years without benefit, and we have seen prompt improvement in one when the opening closed spontaneously, and in others when we had it abolished by operation. In 1919 Seale Harris said: "In amebic colitis I have had the misfortune to see a number of cases of appendicostomy done without any relief to the patient, and I did not see a single case cured by it. The operation, at one time in vogue in the South, has been largely given up." Schmidt reported thirty cases of chronic suppurative colitis, half of which were treated medically and half surgically. In the cases treated medically eight patients recovered, two died, one was improved and four unimproved. Of those treated surgically two recovered, three died, seven were improved and two unimproved. Of course the worst cases are usually the ones given over to surgery. In the hemorrhagic cases the British surgeons, Grant, Hayward, MacCarthy, Mummery and Norbury speak in glowing terms of the value of appendicostomy.

CONCLUSIONS

1. Our northern chronic dysenteries may be of any type, i. e., there is no type of dysentery that may not be met with in temperate climates, even in persons who have never been South.
2. All dysenteries should be classified etiologically.
3. The known causative germs are: the dysentery protozoa such as Amebæ and Giardia (Lamblia), the various strains of specific dysentery bacilli, the tubercle bacillus, the syphilis spirochete, the gonococcus, the colon bacillus, the Bacillus aerogenes capsulatus and the enterococcus. Streptococcus viridans and streptococcus hemolyticus strains may be etiological or may be serious secondarily infecting germs. Various anaerobes and yeasts may possibly be a cause of chronicity or of disagreeable symptoms.
4. The cases due to chemical irritants are kept chronic by secondary bacterial invasion. Other cases probably also owe their chronicity to secondary invasion.
5. Chronic dysentery is a serious disease that requires infinite patience in its treatment and persistence in care after the patient is apparently well.
6. At the present time one hope for better success in the treatment of the ordinary bacterial types would seem to lie in the use of vaccines confined to those autogenous germs that give agglutination and intracutaneous reactions, the intravenous administration being preferred. Another hope lies in the use of the antiseptic dyes, rivanol, acriflavine and gentian violet.

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The author's references will appear in his reprints.

Prostheses in Middle Ear Deafness

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The readiest and most efficacious means of improving the hearing, in cases where there is a loss of middle ear structures, and in some cases of an impairment of hearing without loss of these structures, is the adaptation of a simple prosthesis of cotton and petrolatum. We are often so absorbed in the abstruse and complicated questions of aural technic that we do not realize the dramatic, even spectacular, quality to the instantaneous and apparently magical awakening of hearing by the insertion of a pinch of cotton in an ear that has been deaf for a life time. So unassuming is this aid that sometimes, by its very simplicity of principle, it forces us to rediscover its phenomenal value. The cotton petrolatum drum still, I am convinced, has surprises in store for us as well as for our patients. This aid can be relied on for its efficiency, since it will bring up the hearing to a working normal in a case that has lost everything except its cochlear apparatus.

INDICATIONS

A cotton petrolatum prosthesis is indicated in cases of loss of as much as half of the normal hearing efficiency due to loss or cicatrization of the middle ear structures, except in cases showing small perforations of the drum membrane, which give better results with other kinds of prostheses.

The cotton petrolatum drum is bland and nonirritating as a foreign body, therefore it has many advantages over other artificial devices. The fact

that the cotton fibre lubricated with petrolatum is less harsh than any of the other prostheses available is shown by the ease with which it is borne by middle ears, even ears with delicate and sensitive lining membranes. On the one hand, this prosthesis does not block discharge, should it occur; and on the other hand, the petrolatum prevents the formation of hard crusts.

Cotton petrolatum drums are contraindicated in cases with small perforations of the tympanic membrane; another variety of prosthesis is more efficient in these cases. Also, since in cases of active suppuration of the middle ear they make the treatment and antisepsis more difficult, they are contraindicated in these cases. There are social and intellectual contraindications, too, for we have found that stupid, negligent patients do not give the meagre but intelligent attention necessary to make the cotton petrolatum prosthesis a success. In rare cases also, some people, through the lack of necessary conveniences, have no suitable means of attending to the cotton petrolatum drums.

TECHNIC

The size of the cotton pledget is gauged to correspond to the bulk of the missing structures. If the pledget is too small, it will not stay in place, and if too large, it will muffle the hearing. As a rule, however, the efficiency of a prosthesis depends on its successful adjustment more than on its construction.

After being thoroughly saturated with petrolatum, the pledget should be placed in position by the use of forceps. The precise adjustment is a matter of patient experiment in each case, for it is necessary to ascertain the point of greatest acoustic sensibility so that the cotton may be placed on that point. (Cooperative adjustments between the doctor and the patient as to the most satisfactory position of the pledget often gives the patient a "feel" for the proper position that he sometimes becomes more expert in adjusting the cotton than the doctor.)

The determination of the proper tension required to give the best hearing results in any case requires also a great amount of experimenting.

It is necessary to replace the pledget from time to time, the forceps being used to remove the old and to replace the new pledget. In tolerant ears, the pledget should be removed before the vaseline has left the cotton to such an extent that the cotton becomes too light to perform its function, that is, usually from four to six weeks. In nontolerant ears the cotton must be changed before the ear shows signs of irritation. In irritable ears, it is advisable, before placing a fresh drum, to soak the ear for a few minutes with a saturated solution of boric acid in absolute alcohol.

Case I.—An interesting case of the rediscovery of the principle of the cotton petrolatum drum came to my attention in my office recently when a French lady came for the relief of painful and discharging ears. For many years, ever since she could remember, in spite of much medical and surgical attention, her ears had distressed her with pain and discharge, and she had always been extremely deaf. She told a revealing anecdote in her aural history. On one occasion she was inserting a wet pledget of cotton in her ear to allay her excruciating earache when, suddenly, the instant the pledget reached the bottom of her ear, she heard clearly for the first time in her life. Ever since this revelation, to keep her hearing acute, she had continued to wear wet pledgets in her ears with considerable satisfaction.

I persuaded her to undergo the distress of deafness for a few days in order to give me time to eradicate the suppuration and to allow the toughening of the mucous membrane lining of the middle ear so that they could endure the wearing of cotton petrolatum drums, which was a great improvement over the prosthesis that she had accidentally discovered for herself. (The tuning fork showed that the cochleæ of her ears were intact.)

The result in this case was that the pain ceased at once and the suppuration was stopped in both ears in six days, and three days later the patient was fitted with cotton petrolatum drums with a perfect result as far as hearing was concerned. The patient is now learning to perform her own ear toilet, changing and adjusting the drums whenever necessary.

Case II.—A deaf young woman was referred to me eighteen years ago with double chronic middle ear suppuration complicated with acute mastoiditis on one side. I performed a conservative radical mastoid operation (for the mastoiditis). The major ossicles had to be removed and the stapes was not found. The final operative result in this ear was rapid healing followed by a considerable improvement of hearing, but not enough improvement for the patient to hear ordinary conversation. After the nonoperated ear had received proper attention it soon stopped suppurating, but the hearing was reduced to a minimum, and the final result was a cicatricial condition without loss of structures or perforation of the tympanic membrane. A cotton petrolatum drum inserted in the operated ear raised the hearing to a working level. In the cicatrized ear the hearing remained extremely bad. Ten years later the application of radium to the cicatrized ear had a beneficial effect, probably loosening the cicatrices. A year after the radiation a cotton petrolatum drum placed against the drum membrane of the cicatrized ear raised the hearing satisfactorily, so that for both ears the hearing was well over the requirements of the patient's daily life, permitting her to enjoy music, theatres, church, and ordinary conversation.

Now, eighteen years after the mastoid operation, the patient reported that she wore a cotton petrolatum drum in each ear and was happy in having her hearing. During this time the patient had married and had had several children.

Every six or eight weeks she came to me to have fresh prostheses inserted. She had never acquired sufficient technical skill to do this for herself, though if the drums became displaced she was skilful at readjusting them.

There has been no suppuration of the ears since the beginning of treatment. Occasionally in hot weather, if a cotton drum is left too long in the operated ear a little irritation with serous oozing results, but this immediately dries up under boric acid insufflation. Otherwise there have been no complications in the use of the prostheses. Without a prosthesis in the operated ear the patient is annoyed by loud tinnitus on this side. Cessation of the tinnitus follows readjustment of the cotton drum.

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Excess Blood Sugar in Connection with Certain Surgical Conditions*

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Shortly after I had begun the study of the use of insulin in diabetes and making a more thorough research into blood sugar conditions in connection with that disease, at one of our staff meetings one of the members asked the question: Would it not be possible for these cases of low grade infection and wounds which were slow in healing to be carrying a high blood sugar and yet the same not show in the urine? I answered that that was possible, that it was a line in which I had made no research, and that it was a known fact that in infective conditions the blood sugar index was generally higher than in normal conditions. However, it was possible that in many cases a high blood sugar could be carried and yet not reach the threshold where it would show in the urine, and the patient be really a potential diabetic, although not a true diabetic. This led us to begin the routine examination of the blood in nearly all cases of low grade furunculosis. First, and to our surprise, we found an excess blood sugar ranging from 130 to as high as 250 or 260 or even more, and yet, in none of these cases was there any appearance of sugar in the urine. So we are not treating or talking of true diabetics, those in which at any time the sugar has appeared in the urine, because we make a routine examination of urine in all these cases, twenty-four hour specimens, twice a week, and none has ever showed even a trace.

On careful inquiry into the diet and habits of most of our furunculosis patients, we found high carbohydrate eaters, mostly among the laboring class. Their diet consisted chiefly of meat, plenty of potatoes and bread, and in many instances, was high in syrups and sugar which was used in the coffee and candy, so that we came to the conclusion that in high carbohydrate eaters there may develop an excess of blood sugar independent of a true pancreatic change. However, as to any changes in the pancreas, we of course have been unable to demonstrate that there were none. We make this presumption merely upon the fact that these patients are not diabetics and we have ample opportunity to study them, and we have studied them long enough to know that with proper care and the administration of insulin in some cases, until the error is entirely corrected, there has been no recurrence of the condition, nor has the blood sugar run excessively high when the patients have been careful in their carbohydrate intake. Most of the patients are naturally heavy eaters being engaged in hard manual labor. We found that in most cases 150 to 180 or even 200 grams of carbohydrate intake each day was common. With this great excess of carbohydrate intake it may be seen that the blood might and would carry quite an excess load, and yet, other organs of elimination being in order would not permit the overflow into the urine. In diabetic conditions any infection lowers the resistance and raises the blood sugar index. So, we might ask, would this infection raise the blood sugar index? We answer that we believe it does, but we are firmly convinced that there was an excess blood sugar prevalent prior to the acquisition of the infection, thus lowering the tissue resistance and making infection much easier and the patient much more susceptible. For instance, take a patient with a blood sugar of 150. Allow any small infection to enter the system and there is immediately started a vicious circle because infection itself raises the blood sugar on top of an already lowered tissue resistance. We would, with a patient of that sort, even in a low grade infection, probably find a blood sugar of about 170. The infections thus continue in successive crops and keep the patient in practically the same condition for months, some of our patients having had furunculosis for about two years.

In talking with Dr. McCloud, of Toronto, along this line he was of the opinion that the excess blood sugar existed prior to the infection because he pointed out that a low grade infection of moderate severity would scarcely be able to raise the blood sugar to any perceptible height, or to cause much constitutional disturbance. In some of our cases, there is much constitutional disturbance, so that often the patient is incapacitated from labor. Most of the authorities with whom I have discussed the matter are of the same opinion, that there must have been prior to infection a condition of excess blood sugar.

In many cases of severe injury, there is slow healing and a tendency to nonunion of tissue or bone. On making a routine blood examination an excess blood sugar was found in a large percentage of cases. These patients then are treated the same as the ones with the furunculosis, that is, the regulation of the diet in accordance with the case and the administration of insulin if necessary. We have, without a single exception found marked improvement after this routine has been carried out for a sufficient time to lower the blood sugar to an almost normal level. Our method of treatment for patients whose condition is not severe enough to make them stop work, is to reduce the diet to as near a 1,500 calory diabetic diet as possible, allowing a little excess intake of fats. If the excess blood sugar has been, for example, 130, as a rule a regulation of diet is all that is necessary. But in cases where the blood sugar is higher, we have administered insulin U-20 at the rate of one unit for every fifteen milligrams of blood sugar raise, or about one m. for ten milligrams raise in blood sugar. This dose is administered once a day before the noon day meal, the reason for adopting this technique is that the laborer can appear for his insulin between eleven and twelve and have his largest meal at noon, the diet being more rigidly enforced night and morning than at the meal following the insulin.

*From the Keizer Brothers Clinic. Read before the Central Willamette Medical Society, May 1, 1924.

We have found that in most cases this amount of insulin is sufficient. However, some of the cases have required a little more, say one unit for every ten milligrams of blood sugar rise. The patients in these cases, however, were more of the chronic type and yielded to treatment much less gracefully than those of the more acute type. The blood sugars are taken every ten days and in many cases ten days' treatment has been sufficient to remove the infection. The urine is taken twice a week. When the blood sugar has reached nearly a normal level, say 100 or 110 or even 120, the insulin is dropped and the patient is instructed to remain on restricted diet, the blood still being taken every ten days for twenty or thirty days. If the blood sugar then remains at normal the patient is discharged as cured.

The question probably arises: At what time are these blood tests made? All our blood tests are made during the fasting stage, generally at the morning fast, occasionally where it is impossible for the patient to appear in the morning, they are instructed to go without the night meal and appear at about 8 p. m. The fasting blood is much more accurate and stable than the evening blood, especially among the patients who are at manual labor.

CASE I.—February 3, 1924, Mr. L., aged forty-nine, came into the hospital with the first and second toes crushed so severely as to require amputation, which was done. Three or four days after the amputation the surgeon informed me that the patient was showing gangrene. I immediately examined the blood sugar and found 260. There had been no appearance of sugar in this man's urine, and it was examined every morning. He was put on a 1,000 calories diabetic diet and no fast. In three days the gangrene had extended so much, that it was necessary to amputate the foot. On the fifth day there was no change in the blood sugar. Insulin was increased to thirty-five units a day, three doses. The seventh day an improvement was noticed in the wound. This treatment was continued for two weeks when the insulin was reduced one fourth. At the present writing the wound is entirely healed and the patient much improved in general health. He is on ten units of insulin before the noonday meal and an 1,800 calories diet, no fats. This patient showed some acidosis. However, we have used no alkalines in this case except the first week.

CASE II.—Mr. J., aged thirty-eight, December 20, 1923. Severe burn from bursting of steam pipe on a donkey engine. The entire chest and arms were involved. As soon as the wound was in condition a skin graft of one hundred square inches of skin was resorted to. This graft did not appear healthy, especially along the periphery of the wound. This man's blood sugar revealed 190. He was put on 1,000 calories diabetic diet, high proteids and twenty units of insulin, in three doses. After five days the skin graft appeared to have a better color and the entire wound a better appearance. Blood sugar had dropped to 150. At the end of ten days the blood sugar was 125. Nearly all the graft had taken. Insulin was dropped and diet increased to 1,500 calories. This patient registered a complete recovery.

CASE III.—Mr. C. S., January 5, 1924, aged forty-four, longshoreman, compound comminuted fracture of the left tibia and fibula, with great loss of bony structure. Much difficulty was experienced surgically with this case in getting proper position of the bones, there being many fragments which had to be removed. A Lane plate was applied and still the tissues, being badly lacerated about the wound, did not heal properly. After six weeks we took the blood sugar and found 200. This man was put on the routine treatment with forty units of insulin daily. There was no improvement for probably two weeks, when the granulated tissue which had been giving so much trouble began to disappear and the entire wound gave the appearance of healing. To this date the man is in fine condition, a good color is shown about the wound and there is every evidence of ultimate cure.

CASE IV.—Mrs. A., aged thirty-five, April 3, 1924. Referred to me by Dr. Butler on account of a chronic furunculosis of the ear, of a severe type. This patient had been advised to have a mastoid operation, the condition in the external ear not being properly recognized. On examination we found a blood sugar of 190. The urine was loaded with sugar. This was a case of diabetes. I am reporting this case, not as one of our series but to show you the importance of these little boils in making diagnosis. This woman was put in the hospital and given one thousand calories diabetic diet, forty-five units of insulin a day and in five days the furunculosis was well under control. The blood sugar had dropped 170. The urine was sugar free. However, we tried to reduce the insulin in this case but have been unable to do so, so far. Two weeks after having seen the patient, the furunculosis was entirely gone and patient reported each day for meals at the hospital.

CASE VII.—Mr. W., May 7, 1923, aged thirty-nine, longshoreman. Appeared for treatment for successive crops of furunculosis extending over a period of eight months. These boils appeared on the extensor surface of the forearms and wrists. Did not state high carbohydrate intake but on investigation found that in the morning he floated his pancakes in syrup and was a heavy potato eater. His diet was regulated to about 1,500 calories and twelve units of insulin administered before the noonday meal. The furunculosis yielded readily in about seven days. However, in this case there was reappearance in about two weeks of greater severity than the original and a blood sugar of 170 was found. It was probably the most obstinate case we had, as each time insulin was suspended, the furunculosis appeared again. However, after a period of seven or eight weeks, we were able to discharge the patient with a normal blood sugar. I took his blood sugar last week and found it 110. There has been no recurrence.

CONCLUSIONS

The principal idea that we wish to bring home in this paper is that there is prevalent in infective cases very often a high blood sugar which can be remedied either by diet alone or by diet plus insulin, and that this fact is of inestimable value to the general practitioner whether he be a surgeon or an internist.

This study included three other cases which were omitted for lack of space.

Is Tonsillitis Merely a Symptom?*

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The gradual evolution of a departure from normal health into definite disease is often obscure and sometimes deceptive. This applies to tonsillitis. We usually assume that it is a disease, but I wish to offer for consideration the question whether, in becoming enlarged and extruding secretion and débris, the faucial tonsil is performing part of an important, though unrecognized, function of elimination, or whether it is a diseased condition, secondary to inflammation of the nasal mucosa or is due to a local infection. Each of these views has been advanced by men whose opinions are worthy of consideration. Is it probable that in trying to cure tonsillitis we are sacrificing organs enlarged, inflamed, or exhausted by overwork (6, 26, 25, 37, 35)? Their location in the sulci between the faucial pillars, seems adapted to permit considerable swelling without pressure necrosis.

Several years ago one of my patients became seriously ill after an uneventful operation for the complete removal of the faucial and pharyngeal tonsils. Menstruation had been normal, but ceased and was not reestablished for almost two years, and marked symptoms of neurasthenia developed. The sudden onset of such severe symptoms is unusual, but I was able to find in my records the histories of other cases in which delayed or disturbed menstruation followed tonsillectomy performed about the time of puberty. Such sequelæ would not be brought to the notice of laryngologists, so several gynecologists and internists were asked whether they had noted similar cases. They replied in the negative.

The large size of the tonsils in this patient, and the bad effect of their removal, make it appear probable that the hypertrophy had been vicarious, or to assist the function of another organ, at that time wholly or partly disabled. The question arises, however, what the use of the tonsils may be. Are they an important part of the endocrine system (15, 14, 30, 25, 22, 26, 16), and does the patient receive benefit or injury from their removal for tonsillitis (5, 16, 18, 19, 22, 23, 37)? Are they a breeding place for the germs which they always harbor, or are the latter undergoing changes there that are preliminary to lysis and the formation of immunity producing substances? Probably the most popular theory is that during infancy the tonsils assist in inducing natural immunity to the infections (11, 8, 3, 9, 18, 7, 12, 16). The opinion is often expressed that this activity ceases when the child is three or four years old, but it is not logical to assume that they then reverse their action, and favor the infections which they formerly antagonized. The operation of tonsillectomy is the removal of these glands, and when performed under a general anesthetic, the pharyngeal portion of the ring, colloquially known as the adenoids, is usually removed at the same time.

Fraenkel, Goerke, Schoenemann, von Lenhardt and others (13, 21, 33) declared tonsillitis to be secondary to infection or inflammation of the nasal mucosa, and most clinicians regard it as a local affection with constitutional symptoms. Osler (1) expressed himself as inclined to that view, although evidently feeling that the question was debatable. Teachers are accustomed to tell their pupils that a patient with acute tonsillitis is usually more seriously ill than the local condition appears to explain, and that there may be no subjective symptoms to direct attention to the tonsils during the early stages of an acute attack. The pharyngeal disturbance only would in these instances be discovered, because a painstaking general examination of a sick patient disclosed an inconspicuous lesion in his throat. If Ashhurst's views were correct, this would be merely a symptom of a general infection (6, 37).

After Wood (17) had proved that germs could enter through the tonsillar crypts, it was accepted as a fact that they frequently did so, though Wright showed (10) that live germs were usually arrested there. Hare and others (12, 16, 10) taught that the tonsils resisted such entry, unless the system was weakened by disease, or the germs virulent. That there is some relation between rheumatism and tonsillitis is beyond question, but Musser (2), among others, noted that these manifestations frequently alternated, and he found difficulty in deciding which was the primary disorder.

The popular view has been that the infecting organism of rheumatism enters through the crypts, but W. W. Ashhurst (6) observed an attack of acute tonsillitis, apparently induced by the excretion of toxins through them, and Zahorsky (18) has expressed the opinion that an attack of acute tonsillitis is, for a time, followed by increased immunity to acute infections.

We know that bacteria, pathogenic elsewhere, are normal and necessary in certain parts of the digestive tract, so that their constant presence in the tonsils proves nothing for or against these organs (9). Laboratory experiments by Ott, Farmachidis, Masini and others (14, 30, 15) have shown that the administration of tonsil extract to animals results in an increased flow of urine and has apparently an effect on the blood pressure. The congestion that is common at menstruation and during sexual activity and the troublesome bleeding that often complicates tonsillectomy performed about the time of menstruation appear to confirm the belief that they are functionally associated with the generative system. The increased bodily growth, often noted in boys after tonsillectomy, may have a similar explanation. In treating cases of cardiorenal disease with high blood pressure, I have in several instances seen considerable improvement follow the administration of small doses of tonsil extract for a couple of weeks. Secretion of urine has increased, and in some there has occurred a simultaneous diastolic rise and systolic fall toward normal, such as often takes place from the use of digitalis. This latter is not constant, but a systolic pressure, subnormal from any cause, be-

*Read before the Philadelphia County Medical Society, June 11, 1924.

comes still lower if tonsil extract be given. As the tonsils are frequently excised in the hope of overcoming persistent high pressure, this fact might deserve consideration.

Like many others, I was formerly very enthusiastic about the brilliant results that appear to follow tonsillectomy in some cases of chorea, rheumatism, and allied disorders, but these results do not always stand critical study nor the test of time (18, 27, 29, 38). Articles are becoming numerous and opinion outspoken in regard to this, pleading for care in diagnosis and more attention to the sinuses, ears, and septal deflections, before assuming that the primary trouble lies in the tonsils, even though these may appear somewhat large (29, 16, 21, 33, 13, 34, 35).

Treatment of the nose is usually required, in addition to that of the tonsils, and if well performed will, in most cases, render a tonsil operation superfluous. When the eyes, kidneys, spleen and other organs show evidence of disease, it is customary to try to restore them to normal, undertaking their excision only when such methods fail. As the tonsils usually respond readily to conservative treatment (19, 26, 23), why should we not make use of it?

Pulmonary abscess and acute tuberculosis are not uncommon after tonsillectomy, and have usually been attributed to prolonged or unskillful anesthesia or to the inspiration of pus. The dexterity and experience of some of the operators concerned would lead to great doubt about this explanation, and it seems at least plausible, as has been suggested (28, 31, 20, 36), to attribute it to infection through the blood by emboli, the operation *per se*. Perhaps it may also be the loss of the functioning tonsil and the consequent overwhelming of the system by an unresisted infection or to the disturbance of the endocrine chain.

Barnes and others (7, 37, 24, 16) have drawn attention to the hypertrophy of adjacent lymphoid elements after removal of the faucial and pharyngeal members of the ring. Barnes and Mackenzie state that this is normal and vicarious, meaning apparently that they develop to secure the performance of the function of the ablated organs. Richardson thinks it a pathological recurrence. In patients with high blood pressure, compensatory hypertrophy of the lingual tonsil may be great enough to cause obstructive symptoms, although it may appear to be healthy tissue.

None of these observations carries proof of useful function, but taken collectively, they are suggestive of there being such, and from a clinical viewpoint this is important, as it might materially alter our views about the appropriate treatment.

CONCLUSIONS

We do not yet know whether the tonsil is an important part of the organism of an adult, and tonsillitis is usually an incomplete diagnosis. A cause for it can in most instances be found, and cause and effect are together relieved by appropriate treatment. Like all operative procedures, tonsillectomy has its place, but it is not a general cureall for toxemia. It should only be performed when necessary, after a careful, discriminating diagnosis; not with the thought that it is harmless, whether it helps or not.

The author's references will appear in his reprints.

Problems in Eclampsia*

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To correlate and discuss the many theories placed before the medical profession in the study of eclampsia would be too time consuming and of doubtful benefit. Suffice it to say that while much has been done a great deal more remains to be done before a definite etiological factor will be found in the causation of this condition. The fact that eclampsia causes more deaths in childbirth than any other disease, except sepsis, is sufficient excuse to bring the subject again and again before the profession in the hope that still more study and further effort will be expended in prophylaxis of this disease. While it is true that many cases of eclampsia are fatal from the very beginning of the condition in spite of any and every form of treatment, it is also true that at least eighty per cent. of all cases can be avoided by a proper study of the prenatal conditions always found in these patients. The reward to be gained by watchfulness and care is of sufficient importance to call attention again and again to the salient features of eclampsia as we know them today. However, a short résumé of some of the important theories in connection with eclampsia will be in place, since it may help to elucidate the different methods of treatment as practised at present.

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THE KIDNEY AS THE DISTURBING ELEMENT

For a long time it was supposed that the kidney was the primary organ affected and that eclampsia, like uremia, had its origin here. In fact, eclampsia and uremia were supposed to be one and the same thing, and added to the clinical similarity was the finding of pathological changes in the kidneys of patients who came to the autopsy table. However, enough is known at present to show that the pathological changes in the kidneys are not entirely similar, and that the clinical features differ to a great extent. The entire question is still surrounded with doubt and mystery, and investigators are seeking light as to whether the changes in the kidneys are secondary to other pathology, as in all toxic conditions, or whether the changes found are due to pressure by an enlarging uterus upon the kidney or ureter, with consequent disturbance of the circulation. The consensus of opinion now seems to be that the kidney is affected secondarily, or that there may

be two forms of eclampsia, one known as the renal type, in which the kidney is the primary seat of disease and the liver the secondary, and the second known as the hepatic type, in which there is secondary involvement of the kidneys. That there is a true kidney of pregnancy cannot be denied, but exactly what rôle this plays in eclampsia is by no means definite.

THE PLACENTA AS THE CAUSE.

Since 1901 when Cocchi found that injections of placental substances caused lesions of the kidney and liver, the placental theory seems to have gained considerable ground. Those working along this line of investigation assume that the physiological syncytiolysis is the fundamental process which makes eclampsia possible. Importance has been added to this theory by the discovery of hormones in the placenta, so that the placenta has been given the rôle of a ductless gland. That there is a definite hormone secreted by the chorionic elements of the placenta is definitely certain, but just what effect it has upon the maternal organism is not yet known.

Secondary factors comprise the presence in the blood serum of a substance which activates this placental enzyme or toxin, and the absence of some inactivating material which normally protects the organism. The theory of anaphylaxis rather upholds this view, for the mechanism involved in sensibilizing the gravida to a poisonous principle presupposes the absence of some immune body. But while the reaction of the gravida toward the absorbed placental villi is a fact, and valuable as it goes, it does not by any means account for eclampsia as a whole. Some observers have described a ferment present in the placenta, similar to that in the pancreas, which ferment is able to split up the albumin in the maternal organism. Pathological changes here cause the trouble.

Veit holds that the process is due to the presence of placental cells in the circulation, while Ascoli asserts that these cells in themselves are not toxic, but when dissolved in the maternal circulation become toxic. If the organism produces antitoxins, all goes well. Halban makes the unequivocal statement that all maternal reactions are due to an internal secretion of the placenta. The recent work by Titus and Givens, whereby they try to prove that in eclampsia there seems to be a shortage of carbohydrates in the maternal organism, due to an unusual demand on the part of the growing fetus, with a consequent depletion of glycogen in the liver, may be linked up with the effect of the placental hormone in the liver. The whole phase of the placental theory is clouded by such uncertainty that it is impossible to arrive at any definite conclusion.

INTERNAL GLAND THEORY.

This phase of the subject is coming more and more to the front at present due to the interest shown in the study of ductless glands. The thyroid naturally bears the brunt of the guilt for various reasons. A slight enlargement and hyperactivity of this gland is physiological in pregnancy. This hyperactivity may take place with no appreciable change in size, and is essential in order that the increased metabolism consequent upon the pregnant state can be taken care of. Failure of the thyroid to accommodate itself, either through hypoactivity or hyperactivity, leads to an unbalancing of maternal anabolism and catabolism, and a toxic state ensues. Since the thyroid itself seldom plays a lone hand, it is natural to suppose that other glands take part in the process. The effect of the corpus luteum secretion, which is supposed to be stored up in the placenta, is unknown. The pancreas, adrenals, pituitary, etc., share in the pathology, and, here again, the glycogenic function of the liver may be disturbed.

TYPES OF ECLAMPSIA

Two types of eclampsia have been recognized from an endocrinological viewpoint, cases with thyroid hypoactivity and an insufficient secretion to take care of the increased metabolism in the liver, and cases associated with Graves's disease, which condition is made distinctly worse by pregnancy. Hyperactivity of the parathyroids leading to a rapid withdrawal of calcium from the maternal organism has also been spoken of as part of the process.

THE FETUS ITSELF.

The view that eclampsia is due to fetal products, toxic in nature, circulating in the maternal circulation, is feasible at its face value, but indefinite and lacking confirmation upon close investigation. Nothing can be found in the blood or urine of the mother that can be regarded as toxic material. The nitrogen, which the fetus absorbs, is burned up to the physiological product, urea, by the oxygen transported to it by the placenta, and only minimal amounts of urea and creatinin pass into the maternal organism. In the most unfavorable cases, if the kidney of the fetus should not secrete at all in twenty-four hours, only 1.4 grams of urea would pass into the maternal organism. With a body weight of 175 pounds the adult can produce thirty-five grams of urea—a fetus of seven and a half pounds produces about 1.4 grams (studies of Blumreich). This increase of thirty-five grams to 36.4 grams is the limit of the increase of physiological fluctuation, and can also be achieved by the mother by an increase in her diet of fifty grams of meat a day. Also, the claim that this fetal refuse goes directly into the vena cava cannot hold, since the same thing happens continually in maternal metabolism, the only exception being the intestinal products which go by way of the liver. This theory also fails to account for cases of eclampsia where no fetus is present, as in moles.

THEORIES OF TITUS AND GIVENS.

The work of Titus and Givens as mentioned above may be a step forward in the right direction, if their work proves to be accurate and confirmed by other observers. According to them the reserve store of glycogen in the liver is drawn upon, with the result that a depletion in this organ occurs. Pathological changes in the cells result from this depletion, and its detoxicating and other normal functions are primarily impaired. The disturbances in the kidney functions are probably secondary to hepatic changes. Perhaps, as stated above, the ductless glands, including the placenta, may take part in this depletion process. They lay claim to favorable results with their method of treatment, but claims of all sort have been put forth only to fall by the wayside and lie forgotten in the medical graveyard.

VASCULAR TONUS.

Much work is being done at present upon the cause and effect of increased vascular tonus or angiospasm, which affects the entire peripheral circulation. Little can be said positively about this phase of the problem at present, and reports are meagre and require substantiation. It may be possible that the toxins circulating in the maternal blood produce a pathological effect upon the capillary system, with the consequent changes in the kidneys, liver, brain, etc., and may, in fact, account for the edema in the various parts of the body. Nevertheless, it cannot and does not explain anything relating to the causation of the disease itself. Delay in capillary current with stagnation alternating with good current is due to spasms in the precapillary vessels.

LABORATORY AND RESEARCH WORK.

A tremendous amount of labor has been expended in laboratory and research work, but little light has been thrown on the subject. The conclusions of Slemons in his *Analysis of the Blood in Eclampsia and Allied Conditions,* give a fair estimate of just what is to be expected at present from this branch of research work. There is the usual quantity of aminoacid and a slight retention of nitrogenous waste products, as urea and uric acid. After convulsions there is a slight increase in the blood sugar. The total fat is approximately the same in cases of toxemia as in normal pregnancy. Usually the cholesterol is increased and the lecithin diminished in eclampsia. The carbon dioxide combining power of the plasma is residual during normal pregnancy, indicating a mild acidosis, and the variations met with in the presence of autointoxications are insignificant. These results do not support the acidosis nor the derangement of protein metabolism theories of eclampsia, and indicate that the cause of the disease must be sought elsewhere.

Naturally, the urine has come in for a great deal of attention, since often it gives the first manifestations of trouble. Abnormal findings in the urine are more or less constant in almost ninety per cent. of the cases. In ten per cent. careful examinations of the urine in eclampsia have been entirely negative. Many cases show the presence of urobilin and urobilinogen, which may indicate early hepatic irritation. The study of the urea output shows little, and Cragin has shown cases with marked low urea output and no symptoms following.

The presence of urobilin and urobilinogen in some cases and not in others has further strengthened the conception of renal eclampsia and hepatic eclampsia. It is doubtful in my mind whether such a classification has a positive leg to stand on. Imagination has to be stretched considerably to suppose that the presence of a toxin in the blood, evidently the same in all cases and produced from the same sources, will produce in one case degeneration of the kidney tissue, and in another case skip the kidney and damage the liver. I am inclined to the view that there is in all cases a definite selective action of the toxin in the liver primarily, and that the changes in the kidney parenchyma are secondary following the rôle played by the kidneys in all toxic conditions. I have never yet failed to find at an autopsy of an eclamptic patient definite gross and microscopical changes in liver tissues at all stages of degeneration, even up to massive necrosis. Definite changes are also found in the kidneys, but not as severe as those in the liver. Our attention is always called to the kidneys because often the first sign of trouble is discovered there, and the picture of kidney involvement is usually the predominant one the patient presents. Many pregnant women give definite signs of the pregnancy kidneys with albumin, casts, edema, etc., with absolutely no sign of a toxicosis.

A bit more about the pathological changes found in eclampsia. Fahr's latest contribution gives the following after a careful study. The changes in the glomerulus of the kidney consist chiefly in diffusion and tumescence of the capillary wall, varying in intensity and degeneration of the nucleus. The vessels show focal thickening and swelling of the walls of the arterioles. The capillaries show unsymmetrical filling and stasis. Hemoglobin casts may be present. The eclamptic liver in mild cases shows congestion and fatty degeneration; in the severer cases large hemorrhagic and anemic necrosis; microscopically, in the periphery of the lobules there are localized fibrin thrombi; in the capillaries of the portal vein, stagnation followed by cell destruction and independent degeneration in the form of hyalinization and fatty degeneration. The stasis, hemorrhage, and necrosis are caused to a great extent by thrombus formation through the eclampsia toxin which produces coagulation, but there is without doubt also a direct toxic action in the vessel walls and liver cells. It is possible that the vessel spasm may help to cause the liver changes, this spasm being indicated by a premonitory rise in blood pressure in eclampsia, and by direct observation of the capillary changes dependent on thrombosis which are more pronounced in the liver than in the kidneys, because the toxin passes through the hemorrhoidal veins directly into the portal vein, and occlusion of the small branches of the portal vein makes it impossible for the blood to flow freely, with resultant stasis and hemorrhage in the arterial capillary region. The liver receives the coagulating substance at first hand through a vein in which coagulation develops more readily than in the arterial tract, because of the slower current. There may be no relationship between the extent of the necrotic processes in the liver and the severity or number of convulsions.

STAGES OF ECLAMPSIA.

Eclampsia for the sake of clearness and brevity may be divided into the three following periods, 1, the prodromal stage; 2, the preeclamptic stage; and 3, the true eclampsia, which may be subdivided into mild and severe eclampsia. In the treatment of these stages the preeclamptic and mild eclampsia may be classed as one.

The prodromal stage.—Recognizing the condition and treating the patient vigorously at this time is to my mind the most important element in this situation. The first symptoms manifest themselves in the later months of pregnancy, usually from the sixth month on, and in about seventy-five per cent. of the cases occur in primiparæ. These symptoms may be so slight and so often resemble the harmless mechanical results of pressure of the large heavy uterus, such as indigestion or constipation, that only by careful

watching will one be able to detect the passing of the physiological into the pathological. Among the earliest symptoms complained of are a tendency to insomnia, more or less irritability, inability to keep one's mind concentrated upon one subject for any length of time, slight headaches, followed by a resumption of the vomiting. The patient complains bitterly of being uncomfortable; edema may or may not be present at this time. Examination of the urine will disclose traces of albumin, a few hyaline casts, perhaps a lowered urea output, possibly a faint trace of urobilin and urobilinogen. The blood pressure may show a gradual rise above 130 systolic; in fact, this rise in the blood pressure may be the first signal to call attention to the fact that all is not well.

At this stage, if treatment is vigorous and careful, the entire course of the disease may be stopped short and further complications avoided. This holds true in about eighty per cent. of the cases, the other twenty per cent. passing quickly into the preeclamptic state in spite of all effort and treatment. The symptoms here become more marked and the clinical picture becomes more ominous. The headaches become more intense, various disturbances in sight take place, and there is epigastric pain accompanied by vomiting, often a grave sign of impending danger. The urine becomes scanty in amount, albumin is increased, hyaline and granular casts present, and the edema is more prominent. The blood pressure shows a steady rise and may be from 150 systolic up. The study of the blood pressure has become more common and its importance is being more and more emphasized. Williams ascribes it to the constricting property on the arterioles of the eclamptic toxin with a constant reduction of the lumen and an increased resistance in the arterial tree. The average blood pressure should be between 100 to 125. A steadily increasing rise in repeated examinations should immediately call attention to the fact that something is wrong, and a thorough examination be instituted and measures taken to combat further trouble. Irving's statistics are interesting. He shows that in cases where the blood pressure is 130 to 140, one in every thirty-two patients manifest toxemia; with a pressure of 140 to 150, one in eleven; with a pressure of 150 to 160, one in three; from 160 to 180, one half are toxic, and above 180, all cases become toxic. Elevated blood pressure may be the first sign noticed, and is a more frequent early symptom than albuminuria, and is not proportional to the amount of albumin present in the urine.

Even at this time much can be done to prevent the final stage—the true eclampsia. This phase of the disease is ushered in with the characteristic convulsions. It often happens that the convulsions are the first intimation the physician has that he is dealing with a toxic condition, but I cannot but feel that in these cases the patient presented preeclamptic symptoms before her convulsions took place, and that for some reason or other the constitutional disturbances went unnoticed by both patient and physician. A careful history will always bring out that the woman had been suffering from some disturbances that were not normal. The eclamptic period may be divided into two stages—the mild and severe. The differentiation between the two is often impossible, and no arbitrary rule can be laid down. In apparently mild cases the patients have died in spite of any form of treatment, and vice versa. As a general rule, however, it may be stated that the degree of severity will depend upon several factors. The amount of albumin secured from the bladder by the catheter, the number and frequency of the convulsions, and the mental condition of the patient, may give an idea as to the severity. If the urine is scant in amount and boils solid; if there have been ten or more convulsions, or if the patient is in a state of coma, such cases should be classed as severe. On the other hand, if a fair quantity of urine is obtained, the amount of albumin moderate, and especially if the patient's mental condition is clear between attacks, with long intervals between the attacks, we are justified in classing such a case as a mild one. Such a classification is of some importance when treatment is considered. In the socalled mild cases the mortality is one fifth of that of the severe cases, and also the choice of the method of treatment may be different. These cases are admirable for treatment by the conservative method, and give the splendid results reported by Stroganoff, Zweifel, and the Rotunda Hospital. The severe cases will naturally call for more radical treatment with higher mortality rates. It is for this reason that I think it important for the physician to know definitely just what sort of condition he is dealing with as far as possible. The exceptional case proves the rule and should not be sufficient cause to avoid any classification.

The time to treat eclampsia is before its occurrence. This point cannot be too often repeated, and if once thoroughly realized eighty per cent. of the cases can be avoided. The proper prenatal examinations made regularly and conscientiously will usually detect the early signs and symptoms of impending toxemia, or its presence, and the careful management of the case at this time will carry the patient to a successful termination of her pregnancy, with little or no trouble in the majority of cases. The careful interpretation of complaints, and the proper examination of the blood pressure and urine, will give the attending physician sufficient knowledge as to the progress of his patient's condition. The mere examination of the urine for the presence of albumin is not sufficient, but search should be made for casts, blood, urobilin and urobilinogen. Careful observations of the blood pressure should be made and records kept. A sudden rise or a gradual rise over a period of time should demand investigation. Eternal vigilance will bring its reward.

The treatment of the prodromal stage should be strictly enforced, and under the control of the physician. Hospital care should be instituted if this control cannot be obtained at the patient's home. The patient should be placed in bed immediately so that complete rest may be secured. A stoppage of all food, and only milk, from two to three quarts a day, allowed. It may even be necessary to stop this food. All the organs of elimination should be stimulated so that the proper functioning may take place. Daily warm baths should be given to stimulate the action of the skin. The bowels should be made to move daily, or even several times daily, and saline cathartics administered to secure these results. A daily colonic irrigation of several gallons, preferably with five per cent. glucose solution, should be given, and

upon the return of clear fluid a sufficient quantity be left in the bowel for absorption. The kidneys should be activated and may be helped by the proper use of diuretics. This course of treatment should be kept up until there is definite improvement, which usually takes place in from ten to fourteen days. As the condition improves the diet may be gradually added to, and the patient allowed out of bed. A careful watch should be kept over her continually, and if any tendency to relapse occurs, an immediate return to treatment be instituted. In this way often the patient can be carried to full term and labor proceed normally with no untoward results. Thyroid extract in five grain doses should be given, and a watch kept on the heart action, decreasing the dose if necessary. Calcium lactate may also be tried.

If, in spite of treatment at this stage, the patient grows progressively worse, which will happen, or if she is seen in the preeclamptic period, a definite routine treatment should be planned and the advisability of terminating pregnancy considered. The urine becomes scanty, edema more marked, frontal headaches persist, vomiting takes place, eye symptoms manifest themselves, and epigastric pain is complained of. There may also be present a severe itching over the body. Such a picture completes the clinical aspect of the preeclamptic, who soon lapses into convulsions.

CONSERVATIVE TREATMENT

It is at this time that the socalled conservative treatment finds its greatest usefulness. The method of treatment chosen should be one of simplicity plus the avoidance of shock and trauma as far as possible. Furthermore, the physician should not be the slave to any one method of treatment. There is not and cannot be one particular line of treatment for this condition. A definite plan should be determined, depending upon the condition of the patient, the severity of the symptoms, the period of pregnancy, and the condition of the cervix. The plan should combine the best that can be found in the Stroganoff, the Zweifel, the Rotunda, or any method that the physician thinks will bring results. The main point to be considered is to get away from the routine method of treatment, and to treat each patient individually. Fit the treatment to the patient, and not the patient to the treatment. It should be remembered always that no two eclamptic patients are exactly alike and each must be judged individually, and, I repeat, the method chosen should be the best for that particular patient, regardless of whether it is conservative or radical.

The patient should, of course, be in a hospital, preferably in a darkened room, and under continuous supervision by trained nurses. Care should be taken that the respiratory passages are clear.

An initial dose of half a grain of morphine sulphate is given hypodermically, and when its effect is noticed the stomach is washed out with a solution of bicarbonate of soda. As soon as the stomach is empty either magnesium sulphate or castor oil is passed into the stomach through the tube and left there. A high colonic irrigation of from three to five gallons of a five per cent. solution of glucose is then given, to be repeated in twelve hours if necessary, and at leat one pint of this solution is left in the rectum. With the patient now under the influence of the morphine, the blood pressure should be taken and vaginal examination made to determine the condition of the cervix, the position and presentation of the fetus. If the pressure is 175 or above, a sufficient amount of blood—usually 500 to 700 c. c.—should be withdrawn from the arm until the pressure, if possible, is brought to 150. Intravenous injections of 250 c. c. of glucose solution (50 grains to 250 c. c. of water) may be given and repeated if necessary. The patient may be wrapped in warm blankets. Wet packs should be avoided as they are too depressing. With these measures accomplished the patient is usually quiet and will have fallen into labor by this time. In multiparæ when the cervix is soft, dilated to some extent, or easily dilatable, the membrane should be ruptured, or a bag may be inserted, and labor allowed to proceed normally. As soon as full dilatation is secured, the second stage may be omitted by the proper application of a low or medium forceps. If dilatation is proceeding slowly and the patient shows signs of irritability or convulsions appear again, dilatation may be secured manually and delivery hastened by forceps. When manual dilatation is necessary it should be done slowly and carefully under complete surgical anesthesia and every means taken to avoid laceration. There is never any indication for rapid cervical dilatation, and the half hour that might be saved by rapidly dilating a cervix will be at the expense of an hour's suturing of a torn bleeding cervix after delivery, besides the great loss of blood and shock incident thereto. In these cases where labor does not start it should be induced and allowed to proceed, or hastened, in the manner described above. Version may be tried if dilatation is complete and the head still high and the measurements normal.

The same general principles of treatment can be carried out in primiparæ where labor has begun; every measure instituted should be for the purpose of hastening its end. The various means at hand to hasten the first stage, as mentioned above, such as bags, manual dilatation, etc., may be employed and the second stage terminated by version or forceps. In cases where labor has not started and conditions are favorable, that is, the cervix shows a tendency to soften, labor should be induced regardless of the period of gestation. All measures undertaken should be performed under complete surgical anesthesia.

Those cases that can be classed as of the severe type, either from the onset or those passing from the mild to the severe, will usually require a more radical plan of treatment. The preliminary treatment as outlined above should be instituted and the operative procedure be determined upon, planned according to the condition of the cervix and the period of gestation. If it is definitely decided that some operative measure must be employed venesection may be omitted, as a sufficient amount of blood will be lost by the operation to bring about the desired drop in the blood pressure. Wherever the uterus can be emptied by simpler measures it should be done, and here venesection should be performed before delivery. Patients in the sixth or seventh months of pregnancy, either primiparæ or multiparæ and not in labor, may require a vaginal Cæsarean section in order to empty the uterus rapidly. In the

later months, when the child is viable, the patient, a multipara, cervix soft and dilatable, manual dilatation, with extraction by forceps or version, is the method that will give most success. Seldom will it be found necessary in these cases to perform abdominal Cæsarean section, unless other indications are present that necessitate this operation. The secret of success here will lie in the simplicity of the treatment instituted and the rapidity with which it can be executed. In primiparæ, however, at or near term, where convulsions are frequent or the patient in a state of coma, a different proposition confronts the physician. Examination will often reveal the cervix long, rigid, and practically undilatable. No good can come of delay here, and radical measures should be instituted at once. It is impossible to dilate such a cervix, and vaginal Cæsarean section is out of the question. Abdominal section is the only procedure left and should be performed without delay. I feel that this method of treatment in this class of cases admits of no argument against Cæsarean section, the only question being as to how quickly it should be done.

The entire question can be summed up in a few words—treat the patient before eclampsia develops and thereby eliminate eighty per cent. of the cases. When convulsions are unavoidable, treat in the simplest manner possible, allowing nature full scope, and when assistance becomes necessary use measures that will give results with a minimum amount of shock and trauma. Conservatism may be the method of choice, but radical measures have their place in the treatment of eclampsia. Each patient should be studied carefully and the method of treatment chosen should be the one best adapted for that individual case, and not chosen for the reason that it was successful in another case of eclampsia.

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Radicular Pain and Its Relation to Spondylitis Deformans from a Neurological Viewpoint*

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The subject of radicular or spinal root pain, whatever its origin, is one of infinite interest and importance. Obviously a great number of pathological states may be responsible for radicular disturbances, varying from inflammatory reactions to neoplastic processes. Radicular pain may be the expression of a purely local and limited process of a benign character or the reaction to a widespread and grave disease of the central nervous system. The spinal roots may be affected in their intradural or their extradural course. In either manner the effect is the same, viz., sharp, knifelike or lancinating, dull or boring, with or without paresthesia of various sorts, the description naturally varying in patients as do their emotional reactions to distressing situations.

It is not within the scope nor the purpose of this brief paper to give a detailed study of the affections that may be responsible for the radicular syndrome. The possibilities that call forth pain of a radicular type have been indicated in the introduction and need be dwelt upon no further. As the title indicates, the discussion will be limited to that form of radicular pain due to mechanical disturbances incidental to inflammatory disease of spinal vertebræ.

Orthopedists, whose attention is at all times focussed on the bony framework of the human body, have been quick to grasp the significance of this form of root pain. The profession in general, however, have missed the relationship between radicular disturbances and affections of the bony spine. In many instances personally observed the patient's complaint was not directed to the vertebræ. This was particularly true of spondylitis of a limited character. This in a measure may have directed the examiner's attention away from the seat of the disease. Obviously where the spondylitic process had involved the major part of the bony spine and the deformans stage reached the relationship between the radicular discomfort and the underlying bony affection was more readily established.

At the risk of repetition of a topic with which orthopedists are quite familiar an effort will be made, within the time limit imposed, to give in brief a neurological survey of cases of spondylitis that present themselves with symptoms of root irritation. At this point it may be of interest to note that one may see extensive disease of the bony vertebræ with practically no radicular involvement such as the *spondylose rhizomelique* of Marie. Then again the same amount of involvement may be responsible for an agonizing radiculitis similar to the types originally described by Bechterew. One may venture to explain this anomaly by the differences in the infectious agencies bringing about the spondylitis. Another point of interest may be here mentioned that even in the presence of most advanced forms of spondylitis deformans one never sees implication of the spinal cord parenchyma. One author notes that the cord readily adapts itself to various deforming attitudes of its bony encasement. We all can readily agree to this apparent fact. Neoplastic and tuberculous disease of the vertebræ obviously do not treat the cord with such benign consideration.

Excluding, therefore, the cord proper from direct involvement in the average case of spondylitis, we can readily explain the various phenomena that occur in this type of vertebral disease, as the result of irritation or compression of the spinal roots in their intervertebral course. In brief, these are paroxysmal or continuous pain, various paresthesias,

*Paper read before the Orthopedic Section of the New York Academy of Medicine, February 15, 1924.

either of a subjective or objective character, sensory and motor defects and reflex anomalies. The distribution and severity depend on the site, and extent of the implication. Not all of the above mentioned discomforts are necessarily present in every case. Complete and incomplete forms abound, such as are observed in any other disease picture. It may here be parenthetically stated that after observing a considerable number of cases of spondylitis with root symptoms, one is impressed by the amount of abuse the spinal roots can be subjected to without seriously crippling their functions.

In a study of the clinical forms of spondylitis with root symptoms, we purposely excluded the gross types of Bechterew or Strümpell-Marie from consideration. These are the true forms of spondylitis deformans, the manifestations of which are quite familiar to orthopedists. That form, however, wherein the spondylitic process was limited to several vertebræ, with concomitant radicular involvement interested us greatly. Most of these types (practically all one might say) showed involvement of the lumbar vertebræ or lumbosacral portion of the spine. While the x ray readily revealed the disease process in a majority of the cases, one was impressed by a considerable number that failed to show any pathology. We were quite sure, however, that in spite of the negative röntgen picture, the spondylitis existed. One may venture the supposition that in these cases, exudates about the nerve roots are responsible for the symptoms. Bony overgrowth is probably a later manifestation and hence more readily discernible on the plate.

The root symptoms were obviously in relation to the vertebræ involved, and were as a rule indefinitely localized by the patient. This can readily be explained by the fact that a number of roots are usually involved—some considerably, others very little. While sciatic pain distribution was common enough indicating involvement of the sacral roots, a number complained of pain sharply limited to the outer and anterior aspect of the thigh. In these cases it was evident that the upper lumbar roots had borne the brunt of the underlying bony pathology. In one case under observation the patient complained bitterly of a burning pain over a circumscribed area above the ankle.

It might be of interest at this point to mention that degenerative disease of the sciatic nerve—in other words a true neuritis—was not seen as often with spondylitis, as with sacroiliac affections. This marked difference may be explained by the fact that in spondylitis the roots are involved while sacroiliac disease affects the plexus, the latter being more vulnerable to neuritic changes. Plexus formation is relatively a later acquisition in the development of the peripheral neural apparatus, hence they are apt to succumb more readily to noxious influences.

The reflexes in a number of cases of spondylitis showed alterations worthy of mention. In the main the deep reflexes of the lower extremities were equal and exaggerated. A number, however, showed marked differences on both sides. A decided diminution to complete absence of one kneejerk was observed a number of times. Absence of both knee jerks with spondylitis would be an interesting phenomenon if observed. We have never seen it in the material at our disposal. The presence of unequal knee responses in persons past middle age need not necessarily imply lues of the spinal axis. Spondylitis of a localized character may be responsible for such reflex alterations.

And finally the treatment of radicular pain in these types of vertebral affections must engage our attention. Orthopedists are familiar with the therapeutic methods applicable to the underlying bony pathology and further comment on this phase seems unnecessary. Some do well with spinal immobilization. Others are less fortunate and continue to complain bitterly. We cannot share the optimism of those who state that effective immobilization stops the root pains. To these unfortunates we have advised intermittent confinement to bed for periods ranging from one to four weeks. Considerable and prolonged relief seemed to follow such treatment.

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Laboratory Procedures of Interest to the Urologist*

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There is perhaps no field in medicine in which the laboratory is more indispensable than in genitourinary work, and the multitude of ways in which the laboratory is of service as regards diagnosis and prognosis make it difficult to cover the field in one short paper.

While the field of laboratory work has broadened tremendously in the last few years we must not forget that our predecessors or we, ourselves, ten or more years ago, obtained much information from the means then at our command. A majority of the diseases affecting the kidney, ureter or bladder cause changes in the urine which are recognizable by the ordinary chemical and microscopical examination, and which together with the history and physical examination of the patient are sufficient to establish the diagnosis. On the other hand it must be admitted that these methods alone often fail to reveal the extent of the disease and that we occasionally see cases of advanced renal impairment which show no albumin or casts, and that we also see cases with no marked renal involvement which show both albumin and casts, and in which the condition is secondary to disturbances elsewhere in the body.

*From the Pathological Department of Brooklyn Hospital. Read before the Section of Genitourinary Surgery, New York Academy of Medicine, January 17, 1923.

With the advent of the functional tests, urology gained much in its accuracy of diagnosis and prognosis. The quantitative estimation of urea was formerly much relied upon, for giving a rough idea as to the functional ability of the kidney, but the great difficulty in drawing any conclusion from this knowledge was the fact that the quantity of the urea depended not only on the ability of the kidney to excrete this substance but also upon the amount of urea presented to it for excretion. With the perfection of the phenolsulphonephthalein test this difficulty was largely done away with, for a definitely known quantity of the dye can be administered to the patient and the amount excreted can be accurately measured. The test is a simple one, easy of administration and easy of interpretation. It is of value in almost all cases of renal impairment, particularly in the more advanced cases where the prognosis is uncertain and in surgical cases when it is considered essential to know the functional condition of the kidneys before operating. To perform this test it is necessary for it to be done with the utmost accuracy, inasmuch as we deal only with one c. c. of this dye, which we have to recover again in two hours in the urine. The average normal percentage for the excretion of phenolsulphonephthalein is fifty for the first hour and thirty to thirty-five for the second hour. If in two hours there is an excretion of less than forty per cent., the kidneys should be considered defective.

Mosenthal has devised a functional kidney test, which, though decidedly more elaborate, is satisfactory, as it practically points out to us with what kind of kidney lesion we have to deal. The test can be carried out in the patient's home, but is more likely to be accurate when done in the hospital. It consists of a study of specific gravity, nitrogen, salt and water excretion on specimens passed every two hours during the day and a twelve hour night urine, during twenty-four hours when the patient is on a standard renal diet. Normal urine shows considerable variation in the specific gravity readings, equal balance of salt, nitrogen and water, and a quantity of night urine usually under 400 c. c. Chronic interstitial nephritis shows a fixed low specific gravity, diminished salt and nitrogen excretion, polyuria and increased volume at night. Chronic parenchymatous nephritis shows a diminished salt and normal nitrogen excretion.

Then we come to one of the most important of our kidney tests—the examination of the cystoscopic urine specimen. This particular test enables us to ascertain with a certain accuracy which particular organ is impaired. As a rule the three separate specimens—bladder, right and left kidney urines are sent to the laboratory in sterile test tubes. The urines are separately cultured as a routine on glucose agar, the urea is determined and a careful microscopic examination of the sediment is made. In cases where numerous pus cells are found and the culture is sterile, a guineapig is injected in the abdominal cavity. The weight of the animal is determined and the animal is kept under observation for the next six weeks. If it loses weight and acts sick it is killed before six weeks and an autopsy performed. A guineapig positive for tuberculosis usually shows microscopical tubercles in the mesenteric glands, the liver and especially in the spleen. If there is any doubt, macroscopically, sections are cut and examined histologically. Strange to say, it sometimes happens that an inoculated guineapig gains in weight and shows no signs of sickness and yet at autopsy the spleen is seen to be studded with tubercles. Our diagnosis, therefore, cannot be based on observation of the animal alone, as a gain in weight does not exclude tuberculosis.

We have recently had several cases in the hospital in which some very interesting cultures were obtained by the use of the partial oxygen tension method. In one particular case of Dr. Rathbun's, a Streptococcus viridans was found in the root of an extracted tooth and also in the crypts of the freshly excised tonsils. Suspecting the same organism in the kidneys, as the patient was suffering from a pyelitis, the urine obtained by cystoscopy was cultured in the routine way on glucose agar and also by the low oxygen tension method. The latter tubes showed a luxuriant growth of Bacillus coli and a considerable number of small colonies of Streptococcus viridans. In this particular case it was easy to isolate the streptococcus, which was apparently the real cause of pyelitis, and to make a vaccine. Undoubtedly some of the streptococcus colonies might have been present in the glucose agar tube, cultured in the regular way, but those colonies were overgrown by the Bacillus coli, which multiply much more rapidly than the streptococcus in free oxygen.

Urine specimens showing a great many pus cells, with no organism, are directly examined for tubercle bacilli, before the guineapig is injected. Good results are sometimes obtained by allowing the urine to stand in the testtube overnight so that the sediment settles down gradually. The next day the supernatant fluid is carefully decanted and smears are taken from the upper layer of the sediment. The reason for taking the upper part is that the tubercle bacilli are lighter than the pus cells and other solids which are found in the urine, so the heavier particles sink to the bottom first and the lighter will stay on top. It has happened occasionally that a culture has been sterile, although Bacillus coli was seen in direct sediment examination, and such cases, on investigation, have shown that a small trace of a weak formaldehyde solution, present in the lumen of the catheter, was sufficient to inhibit the growth on the culture media. It is therefore very essential that the catheter is carefully freed of all antiseptics, inasmuch as a urine containing large numbers of pus cells is always suggestive of tuberculosis.

The estimation of urea from the separate kidneys gives us usually an indication of the relative functional ability, although I do not believe that a high urea analyzed by this particular method is an absolute indication of a better function. On the contrary it has occurred very frequently in the large number of examinations which we have done in the Brooklyn Hospital, that urine containing numerous pus cells and even organisms shows very frequently an urea output much higher than that of the normal kidney, and possibly within the normal limits of urea output, whereas the other kidney with negative microscopical findings and sterile culture, apparently a healthy kidney, shows an urea output much lower than that of the diseased kidney. Our records show

that of the last hundred cases of unilateral pyelitis fifty-one per cent. of the diseased kidneys had a higher urea output than the urea output of the healthy kidney. I think that the reason for this occurrence is this, that a patient lying on the table, forcing fluids, eliminates water very quickly through the normal kidney, such urine being clear, in appearance, with a specific gravity not much higher than water and usually with negative microscopical findings. The diseased kidney on the other hand practically does not eliminate the water at all. The amount is much less than from the other kidney. The urine is cloudy, contains a large number of solids and the urea is high, sometimes even higher than the normal urea output. It would appear to be old stagnant urine retained in the pelvis of the diseased kidney. Of course, if it were possible to leave the catheters in the individual kidneys for at least twelve hours at a time, collecting the specimens separately, it would probably be proved that the normal kidney, excreting water clear urine and less solids for a short time, would have at the end of twelve hours more urea in the total individual specimen than the other. This comparison, I believe, is only of value where one kidney is involved, and, as can be easily seen, the amount of urea, or in other words the higher output of urea in a specimen, collected in a short time, does not always indicate a healthier kidney, and the interpretation has to be done very cautiously, in connection with the microscopical findings and the culture. In cases like a bilateral pyelitis the amount of urea output in the separate kidneys is very often found to be approximately the same.

The phenolsulphonephthalein test seems the most valuable of our ordinary kidney function tests. If an injection is given to the patient while the catheters are in the individual ureters, we are able to ascertain the exact period of time before the dye begins to appear in the urine from each kidney. Ordinarily it is delayed if the kidney is diseased. When the patient is given an accurately measured amount of the dye, we also get practically the combined function of the kidneys. In the latter cases we may have difficulty in collecting the urine, especially in cases with obstruction, and if the urine contains free blood. Since we have been able to do simple blood analysis, it is possible for us to ascertain the functional ability of the kidney with much more accuracy, and practically independently of the analysis of the urine, but in measuring the activity of the individual kidney, the phenolsulphonephthalein test seems to be the most practicable.

The routine of blood analysis especially for the urological service consists of the determination of urea, creatinine, sugar and carbon dioxide. The latter especially if a high blood sugar is found.

The chief component of nonprotein nitrogen is urea and since the estimation of the latter is much simpler, we pay more attention to urea nitrogen or urea itself. Mosenthal and Hiller have made a careful study of the relation of the urea to the nonprotein nitrogen in disease. They point out that the selective action of the kidneys maintains the urea nitrogen at a level of fifty per cent. or less of the total nonprotein nitrogen of the blood, but that an impairment of renal function, even of very slight degree, may result in an increase of the percentage of urea nitrogen.

UREA

Urea is the end product of the aminoacids after they have undergone certain metabolic changes. The determination of urea has been much simplified on account of the discovery, by Marshall, of the action of urease (soya bean extract), in converting its nitrogen into ammonia which can be estimated by comparatively simple methods. To study the origin of urea a little more closely, it might be more easily understood by certain experiments which have been performed. If an animal is injected with aminoacids, the amount of aminonitrogen remains unchanged, except in the liver in which a rapid reduction is observed to occur. At the same time the percentage of urea in the blood steadily rises. The simplest interpretation of the result is, that the liver converts the aminoacid into urea and discharges this urea into the blood. But it must not be imagined that the conversion of the aminoacid into urea is exclusively a function of the liver. Certain experiments have shown that this process occurs even in animals from which the liver has been entirely removed. It is probably safe to conclude, however, that the liver is the most active centre for aminoacid transformation and urea formation. If samples of blood are estimated at short intervals of time after the ingestion of a large amount of protein, it is found that the increase becomes early established. Evidently the increase occurs about the same time as the passage of food from the stomach into the duodenum. The normal urea concentration in the blood is between twenty-four and thirty mgms. to the hundred c. c. of blood. The excess is supposed to be eliminated by the kidneys. There can be no doubt that the rate of nitrogen elimination as compared with the nitrogen intake, makes extremely important data from which important deductions with reference to kidney function can be made.

It is a great help to know what a nitrogen equilibrium is and to what an abnormal nitrogen retention can be attributed. The nitrogen equilibrium is defined as the ratio which is obtained by dividing the rate of intake of nitrogen by the rate of elimination. The equilibrium of nitrogen is well represented by a container, having an inverted syphon at the bottom, out of which water flows. If there is an inflow of water it will rise in this vessel until the pressure, due to the water level, is sufficient to produce an equal rate of outflow. In this way the water inflow is analogous to the intake of nitrogen, and the rate of outflow is similar to the rate of nitrogen excretion. The height to which the water must rise in order to cause the outflow to be equal to the inflow, is similar to the nitrogen content of the blood. Therefore if the rate of nitrogen elimination of the kidneys is reduced it is analogous to a small opening in the syphon, as the result of which the water will rise to a higher level or the nitrogen content in the blood will be comparatively higher, for the pressure of the nitrogen in the blood must be such that the excretion of nitrogen through the urine is equal to the intake of nitrogen in the food. The amount of nitrogen accumulated in the blood when the intake and the outflow are equal is therefore an indication of the function of the kidneys, in so far as nitrogen

metabolism is considered. The importance of the kidneys in removing the urea from the blood is readily seen from the changes in the percentage of urea in this fluid after the partial or complete removal of the kidneys. Animals survive nephrectomy for about three days, and during this time urea rapidly accumulates in the blood and begins to make its appearance in the saliva and the intestinal secretions. In men also, when the kidneys are extensively diseased, a similar accumulation of the urea occurs in the blood, some of the excess being got rid of through the sweat and to a certain extent through the intestines. The results obtained from chemical tests of the blood are therefore reliable and explain definite conditions which cannot as easily be diagnosed by other methods. After considerable experience in this class of cases it has been found that the patient showing urea nitrogen under twenty mgm. or urea under forty-five mgm. to the hundred c. c. of blood is a safe operative risk, whereas it is dangerous to operate when the urea is above sixty mgm. to the hundred c. c. of blood. The importance of low protein diet and encouraging perspiration and free movements of the bowels is thus especially indicated in borderline cases, especially where operation is not imminent.

CREATININE

There are approximately 120 grams of creatinine in the body of an average adult. A large proportion is in the muscle, the largest percentage is to be found in the voluntary muscles, the heart containing a medium percentage and the involuntary (intestinal) muscles containing comparatively a small percentage. The testes and the brain contain a trace more than the involuntary muscles. The liver, pancreas, thyroid, kidney and spleen contain traces. Human blood contains about one to two mgms. of creatinine per hundred c. c. of blood and this is almost equally distributed between plasma and the corpuscles. The creatinine content of the blood does not depend upon or vary with the supply of the food stuff and is therefore called the endproduct of endogenous metabolism. But although creatinine is an endogenous metabolite, part of it is derived from the food intake, but it is pretty well established that practically all the creatinine which is taken in by the food will be excreted through the kidneys by the urine. In normal individuals the amount of creatinine is from one to two mgms. per hundred c. c. of blood. But in the hospital we are forced to consider higher values of creatinine. Even in cases without renal involvement, we find very frequently creatinine figures between two and three mgm. that are not easily explained. Although in diabetes a slight retention of creatinine is usually found without any noticeable urea retention. In cases where we find a creatinine content of more than three mgm. almost always a high urea retention is encountered. It is frequently found that cases showing a creatinine content below four mgm. respond to treatment and improve gradually, but above four mgm. usually the reverse is true. Cases which show over five mgm. are invariably fatal within a short period of time. This rule does not hold good in acute cases, such as those due to arsenic or bichloride poisoning. In these latter cases the blood sometimes shows very high values of urea and creatinine though the patient ultimately might recover. By studying the creatinine more closely we may come to the conclusion that a retention of creatinine does not usually occur until the impairment of the kidneys is greatly advanced and the urea content in the blood is even higher than double the usual amount. It seems that the retention of creatinine is only of significance in cases which show a definite urea retention. That this should be is easily explained since creatinine is normally the easiest eliminated of all the nitrogenous waste products.

SUGAR

The most important part of blood sugar in urology is the indication of diabetic tendencies. As already mentioned previously, cases with nitrogen retention show usually a definite hyperglycemia in a moderate degree, which is generally not higher than 200 mgms. This type of hyperglycemia is not always combined with glycosuria. The normal sugar content in the blood is from 80 to 125 mgms. per 100 c. c. The threshold point, in which the kidney acting somewhat as a safety valve, begins to excrete sugar generally is about 170 to 180 mgms. There can, therefore, be a definite hyperglycemia without any glycosuria, or with merely a transient glycosuria, occurring one to two hours after a meal, when the amount of sugar in the blood temporarily exceeds the threshold point. This may occur in incipient or potential diabetic cases, in which the proper preventive treatment might check the progress of the disease. Cases of this type can be easily operated upon without danger after they respond to treatment.

CARBON DIOXIDE

In cases showing any evidence of nitrogen retention or hyperglycemia, the carbon dioxide combining power is ascertained because of the danger of acidosis. The essential cause of acidosis may either come from the addition of foreign acids added to the blood as found in diabetis, or as in nephritis through the acids of a normal metabolism accumulated because of faulty excretion through the kidneys. Healthy blood maintains a constant slight alkalinity, through the influence of the bicarbonates, phosphates and proteins in the blood. The most common methods of measuring the degree of acidosis suggested in most textbooks are: 1, lowered carbon dioxide combining power of the blood; 2, lowered alveolar air tension; 3, decreased affinity of hemoglobin for oxygen; 4, increased hydrogen ion concentration of the blood and retention of alkali by the body in cases where the kidney is able to rapidly excrete an excess of alkali. The test most frequently used in most laboratories and from which the best results have been obtained is the carbon dioxide combining power of the blood, determined by the Van Slyke method. By administration of certain amounts of sodium bicarbonate the depletion of this chemical can be readily determined and has been in practical use for several years. The reaction of urine in normal persons can be easily changed by administration of ten grams sodium bicarbonate, whereas in acidosis of advanced nephritis the deficiency may amount to even more than 100 grams of this chemical.

Palmer and Van Slyke have carefully studied this question in connection with carbon dioxide combining power in the blood. They found that in most pathological cases the urine did not become

more alkaline than the blood until a higher plasma bicarbonate had been reached than in normal individuals. If the administration of bicarbonate should be continued, which was the usual clinical procedure, it would result in giving the patient an injurious amount of alkali. Palmer and Van Slyke point out the importance of carefully controlling the therapeutic use of sodium bicarbonate. They have calculated that taking forty-two pounds as the unit 0.5 grams of sodium bicarbonate will raise the plasma carbon dioxide ten per cent. per volume. Taking this as a standard it is easy to calculate the amount of alkali necessary to restore the plasma bicarbonate to normal. The normal range of carbon dioxide combining power of the blood is from fifty-five to seventy-seven c. c. to the hundred c. c. of plasma. In fatal cases with a marked nitrogen retention a severe acidosis is usually found, which is sufficient to be the actual cause of death. Therefore we may easily come to the conclusion that cases of carbon dioxide volume below forty-five c. c. show a beginning acidosis and are a bad operative risk. In these cases it may be worth while to try the sodium bicarbonate treatment, eventually intravenously with which some excellent results have been obtained.

SUMMARY AND CONCLUSION

After having taken up all these individual tests we may easily come to the conclusion that the preoperative information of the blood chemistry is necessary in all surgical cases, but especially in all surgical conditions of the kidney, ureter, bladder and prostate.

We have found that the estimation of urea is the most helpful of all our tests for the urological service, although if urea is above the normal limits (forty-five mgm. to the 100 c. c. of blood) the determination of carbon dioxide creatinin and sugar is essential.

Local Anesthesia for Dental, Oral, Nose and Throat Surgeons

Fourth Article*

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New York.

THE ANTERIOR ETHMOIDAL FORAMEN

Synonyms.—Anterior ethmoidal foramen; Peukert's; median orbital, etc.

Object.—To reach the anterior ethmoidal foramen and there anesthetize the branch of the nasociliary that passes through it.

Location.—The anterior ethmoidal foramen is located on the internal orbital wall just above the ethmoidal cells, on a horizontal plane with the topmost point of the nasofrontal suture, at a depth of approximately fifteen to twenty-five mm. inward.

Prepare solution.—Prepare four mils of one per cent. procaine solution to which should be added one drop of suprarenal extract which gives an equivalent of about one to 60,000. This quantity of solution includes an excess of two and a half mils.

Select needle.—Select a sterile needle forty-two mm. in length, of 23 gauge, equipped with a hub to fit the syringe. (Many operators make an initial injection into the area into which the needle mentioned above is to enter for the purpose of making the entrance of the needle painless. For this they use a needle twenty-five mm. long and of 25 to 27 gauge. It is my opinion that the entrance of the smaller needle is quite as painful as that of the larger, therefore I do not recommend the use of the smaller needle nor the preliminary injection into the area.)

Syringe.—The syringe best adapted to this injection is either a two c. c. Luer or a two c. c. Record.

Fill syringe with solution, invert so its point is upward, expel air bubbles, attach needle and again expel air bubbles. Wash the skin about the inner canthus of the eye well and thoroughly with soap and water. Wipe with alcohol and dry. Paint the area with the iodine mixture. Be careful that none of the water, the alcohol nor the iodine mixture is allowed to get into the eye. Be careful to follow the technic of the test injection as given under Note No. 7.

Preliminary medication.—Bromural, ten grains; or morphine, one quarter grain, either alone or in combination, should be administered as a preliminary to render the patient complacent.

The patient should be either semirecumbent or fully reclining during and for five to ten minutes after the injection. About five minutes before the actual injection, place a few drops of ten per cent. procaine solution, with suprarenal extract, in the proportion of one to 60,000, in the eye under the lid.

Specific technic.—Enter the needle into the skin about three mm. above the extreme inner angle of the inner canthus of the eye. This point is internal to the conjunctiva and is on a horizontal line with the highest point of the suture of the nasal and frontal bones. The syringe and needle is held in line with a horizontal plane of the head (when erect) and should point in a sagital direction or directly straight from front to back. The needle should enter the skin and immediately glance over the periosteum of the bony prominence (the internal angular process of the frontal bone). The bevel of the needle should be toward bone. Advance the needle along the periosteum in the direction given, being careful to keep the side of the point of the needle in contact with bone or periosteum.

At a depth of approximately twenty mm., a sort of empty space is felt at the needle point. This is the depression formed by the anterior ethmoidal foramen and here lies the anterior ethmoidal (nasal) branch of the nasociliary nerve as well as its accompanying artery and vein. At this point inject one and a half mils of the prepared solution, slowly. Take

*The first article in the series was published in our issue for October 19, 1921; the second in February 1, 1922, and the third in March 1, 1922.

two to three minutes to inject the quantity mentioned. Do not inject the solution until the depression is felt with the needle, except that if pain is evinced during the advance of the needle, a small amount of solution may be sent just in advance of the needle. The foramen may vary as to depth depending upon the size of the head; fifteen to twenty-five mm. are the extremes found in my experience. Its presence is indicated by the feeling of the socalled empty space.

Withdraw the needle, see that it is in its proper place on its hub. Wait from five to twenty minutes for anesthesia which will be indicated by absence of pain upon pricking the membrane of the tip of the nose, on the side injected. Of course, anesthesia is present only on the side of the injection.

Nerve complications.—It is to be remembered that the nasal branch of the nasociliary carries sensation to that portion of the nose, its septum, lateral walls and communicating sinuses and cells, that lies anterior to a line drawn from the incisive canal (anterior palatine foramen) below to the centre of the cribiform plate. Posterior to this line, the nasal cavity is innervated by branches from the sphenopalatine ganglion, except in the area of the posterior ethmoidal cells and the sphenoidal sinus which is innervated by the posterior ethmoidal branch of the nasociliary and by the olfactory. That area supplied by the posterior ethmoidal is best anesthetized by a twenty per cent. procaine pack or spray. The maxillary sinus and its walls are innervated by branches of the infraorbital and from the sphenopalatine ganglion. The skin of the nose, overlying the nasal bone and superior to the cartilages, is supplied by the nasal branches of the infraorbital.

Accidents.—The needle may break. The needle may be deflected from its proper course, injury to the conjunctiva or orbit may result. Terminal branches of the ophthalmic artery may be punctured or minor veins in the part may be punctured with the result that hematoma will follow. (Such puncture hematoma are unpleasant but not at all dangerous. They simply cause a bulging of the eye and the surrounding tissue for a short time, this is followed by a suffusion of the lids (black eye) which passes away in a few days.) But such accidents are not likely to happen if the technic is followed carefully. As a further guide and precaution during the insertion of the needle, the bulb or orbit may be displaced or pushed to one side away from the site of puncture. The finger which holds the orbit out of the way serves as a guide for the needle from the outside. The needle must be in contact with bone or periosteum throughout the journey to the foramen and must not be permitted to bend.

Remarks.—The anesthesia resulting from this injection covers that portion of the nose anterior to a line drawn from the incisive canal to the centre of the cribiform plate and includes the membrane covering or lining the anterior ethmoidal cells and the frontal sinus.

POSTERIOR ETHMOIDAL CELLS, SPHENOIDAL SINUS

Continue to advance the needle in the direction given above, picking up bone once more. Advance the needle to a point within about five mm. of the posterior ethmoidal foramen which means that the needle should be advanced to a depth not to exceed a total of thirty mm. or ten mm. further or deeper than for the anterior ethmoidal foramen. To advance the needle to a greater depth is to invite trouble such as surrounding the optic nerve with solution or to puncture that nerve. It is better practice to pack, spray or paint that area with twenty per cent. procaine solution or the socalled mud.

KILLIAN'S PUNCTURES

This name is frequently given to infiltration injections made at some point or points along the course of the nasal, nasopalatine or the lateral nasal branches of the sphenopalatine ganglion. Injections are made at two points: 1, just anterior to the tuberculum septi in an upward direction, and 2, at a point just below the middle of the lower border of the middle turbinate. The pain induced by the introduction of the needle into and under the membrane is so decidedly unpleasant that most surgeons resort to the pack or spray.

THE INJECTION AT MECKEL'S GANGLION

Synonyms.—Meckel's ganglion; sphenopalatine.

Object.—To reach the ganglion and anesthetize its branches.

Location.—Meckel's ganglion is situated in the sphenopalatine fossa about six to ten mm, below the sphenomaxillary (inferior orbital) fissure.

Prepare solution.—Prepare four mils of one per cent. procaine solution to which add one drop of suprarenal extract; this results in a proportion of about one to 60,000. The quantity mentioned contains an excess of one and a half to two mils.

Select needle.—The needle used for this injection is the same as that described and used for the injection into the posterior infraorbital area. The syringe best adapted to this injection is either a three c. c. Luer or a three c. c. Record.

Meckel's ganglion may be reached and anesthetized by any one of four routes.

1. By diffusion from the injection into the posterior infraorbital area. This injection has already been described.

2. By a direct route somewhat similar to the above. This is known as the external route.

3. By a route above and behind the tuberosity, called the posttuberosity route.

4. By way of the posterior palatine canal, known as the canal route. This route is probably the easiest, simplest and most efficient of the four.

To reach Meckel's ganglion by the external route, make the test injection described under Note No. 7. To prepare, cleanse the area in the mucous fold above the last two molar teeth. Paint with the iodine mixture.

Specific technic.—With the index finger hold the cheek away from the molar teeth so the view will be unobstructed. It is well to have the patient's mouth partly closed so there will be no strain on any muscles. Enter the needle point into the highest part of the mucous fold above the middle of the third molar tooth (the last molar present or about to erupt in younger subjects) but about twelve mm. external to the gum. Because of the peculiar shape and length of the needle, its entrance must be made nearly parallel with the plane of occlusion, yet the angle at which it is entered should be as great as the partly closed mouth will permit.

After the needle point has entered the tissue, it should be pointed upward and inward toward the median line, endeavoring to carry it upward and inward at an angle of about 45° when viewed from the front but, if it could be seen from the side, the needle proper would be nearly vertical. Advance the needle upward in the direction given. After about fifteen mm. of its length has entered the tissue, the side of its point should touch bone. Continue to advance the needle in the direction given, keeping the side of its point in contact with bone, until about twenty-five mm. of its length shall have entered the tissue. During the advance of the needle do not allow the needle point to engage the periosteum since, in that case, it will be impossible to properly direct the needle. The needle point should now be in the sphenopalatine fossa and not more than five mm. away from the ganglion. Here inject from two to two and a half mils of one per cent. procaine solution. Do this slowly. Take three minutes to inject the quantity mentioned.

Withdraw the needle from the tissue, see that it is in its proper place on the hub. Wait from five to twenty minutes for anesthesia to appear.

To reach Meckel's ganglion by the posttuberosity route: Cleanse the mucous membrane around the tuberosity. Paint with the iodine mixture.

Specific technic.—With the mouth wide open, the needle is entered into the tissue at the posteroexternal angle of the tuberosity, in such a position that the pterygoid process shall be missed. The needle is carried directly upward, keeping its point in contact with the posterior surface of the maxilla, until twenty-five mm. of its length shall have been entered into the tissue. The needle point should now be in the sphenopalatine fossa and less than five mm. from the ganglion. Here inject from two to two and a half mils of one per cent. procaine solution. Do this slowly. Take three minutes to inject the quantity mentioned. Withdraw the needle from the tissue and see that it is in its proper place on the hub.

During the advance of the needle, great care must be exercised to keep its point in contact with the posterior surface of the maxilla and to go straight upward. A slight deflection toward the median line will cause the point of the needle to engage or strike the pterygoid process of the sphenoid bone. No damage can result from this deflection except that it will be impossible to reach the desired location and, further, the external pterygoid muscle may be pierced and infiltrated at its attachment thus producing a transcient trismus. If the pterygoid process is struck, withdraw the needle and start again a little more external to the original point.

Great care must be exercised, also, in the passage of the needle to its proper location that the needle shall not be bent nor broken. The extension of the shank of the needle and the length of the syringe makes a very long lever. The tendency is to advance the needle by using the syringe as the lever. This invariably causes the needle to bend. It is better to place the finger under the angle of the needle and to advance the needle by the direct pressure thus applied, while the other hand steadies the syringe.

To reach Meckel's ganglion by the canal route: Cleanse the mucous membrane around the posterior palatine foramen. Paint with the iodine mixture. Remember the location of the posterior palatine canal. Its palatine opening is situated above the last molar tooth erupted but at the junction of the alveolar process and the hard palate.

Specific technic.—Have the patient open his mouth as wide as possible. With the needle as nearly vertical as the opened jaws will permit, enter its point into the mucous membrane under the opening of the canal but close to the alveolar border of the foramen. The needle is entered to the side to avoid puncturing the artery or vein passing through the foramen. In the majority of cases access to the foramen is easy because of its funnelshaped opening.

Having entered the needle into the foramen, advance it slowly and carefully up through the canal being guided in direction by the walls of the canal. Great care must be exercised during the advance of the needle, for frequently the canal is tortuous, so much so in a certain few cases that it is impossible to carry the needle the full length of the canal. Happily, however, about ninety per cent. of the cases have comparatively large and fairly straight canals, quite easy of access.

Having passed through the canal with the needle, its advance should be stopped at a depth of about twenty to thirty mm. (average depth twenty-five mm.) depending upon the age of the patient and the development of the parts. At this point the needle is seldom more than from three to five mm. from the ganglion. Here one and a half mils of one per cent. procaine solution (with suprarenal extract in the proportion of one to 50,000) is injected slowly, taking no less than two minutes to inject. Up to this point one half mil of solution has been injected, throughout the canal and just in advance of the needle, to make its progress painless. Anesthesia will present throughout the distribution of the branches of Meckel's ganglion in from five to twenty minutes and will persist for an average period of about one hour.

By carrying the needle about five mm. deeper, its point will be brought into close proximity to the trunk of the superior maxillary division as it passes across the sphenopalatine and the sphenomaxillary fossæ. The injection of about half a mil of solution during the passage of the needle through the canal, the injection of about one mil of solution at or near the ganglion and the injection of one mil of solution at or near the superior maxillary division will result in an anesthesia of the entire distribution of the superior maxillary division of the trifacial nerve (of course, distal to the site of the injection) except that area in which the anastomosis of the branches of the two trunks occur.

Accidents.—The needle may break. The construction of the needle and shank used for the four routes mentioned next above, renders breakage of the needle extremely easy. Fortunately the weakest point is at the junction of the needle and the shank. Since the needle proper is one and five eighths inches in length about one half inch of needle is left exposed to view. This may be grasped with forceps and removed in the event of breakage.

Hematoma may follow careless insertion of the needle, due to puncture of a vein or artery. The use of a 45° angle point on the needle helps to prevent punctures to a great extent.

Soreness, fainting, shock or collapse will follow the use of old, discolored, unclean or nonisotonic solutions or solutions containing too great a percentage of suprarenal extract. This applies to all injections.

Infection and dangerous abscesses will follow the use of unclean instruments. This applies to all work.

None of these accidents will happen, however, if the technic has been followed.

Area of anesthesia.—Injection at Meckel's ganglion results in anesthesia of the entire nasal cavity (except that portion above and anterior to the anterior border of the vomer bone), of the entire nasopharynx, of the oropharynx as far down as about the middle of the middle constrictor muscle including the floor of the nose, the hard and soft palates, the pillars of the fauces and the upper portion of the tonsils and of the maxillary sinus except a part of the external wall. In other words, anesthesia is present in all of the area to which branches of the ganglion distribute.

INJECTION AT THE ACCESSORY POSTERIOR PALATINE FORAMINA

Object.—To reach and anesthetize the middle and posterior palatine nerves as they emerge from their conducting foramina.

Location.—The accessory posterior palatine foramina are situated, one just back of the posterior palatine foramen but in front of the hamular process and the other just posterior to the posterior border of the tuberosity as formed by the alveolar process.

Prepare three mils of one and a half per cent. procaine solution, this quantity includes an excess of one and a half mils. To the solution thus prepared add one drop of suprarenal extract thus producing an equivalent of about one to 45,000. Select a sterile needle, twenty-five mm. in length and of twenty-three gauge equipped with a hub to fit the syringe. The syringe best adapted to this injection is either a two c. c. Luer or a two c. c. Record. Fill the syringe with solution, invert so its point is upward, expel air bubbles, attach needle and again expel air bubbles. Paint the area with the iodine mixture.

Specific technic.—Directing the syringe and needle from the opposite side of the mouth, enter the needle point into the mucous membrane at a point just under the posterior border of the posterior palatine foramen. Advance the needle to a depth of about three mm. and inject a few drops of solution, continue to advance the needle, still directing it from the opposite side of the mouth, until its point shall be just beyond the middle of the posterior border of the alveolar process but deep in the groove formed by the junction of the wing of the sphenoid and the superior maxillary bone. As a rule there is an overhanging shelf of alveolar process over the groove, whose sidewall is fairly smooth. Try to follow the wall of this shelf of process.

At this point inject about three quarter mil of procaine solution, withdraw the needle slightly and inject more solution, again withdraw the needle a little and inject still more. Continue this until the needle shall be withdrawn from the tissue and a total of one and a half mils of solution shall have been injected.

Anesthesia of the soft palate and the pillars will result in from five to ten minutes. The anesthesia resulting from this injection is not quite as thoroughly satisfactory as could be wished particularly for tonsillectomy though for operations on the uvula and the soft palate it is very pleasing. The injection of choice for work in the pharynx and on the palate is that of Meckel's ganglion by the canal route.

(*To be concluded*)

Some Anomalies in Laryngology

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An anomaly is a condition unusual enough to attract attention, and some anomalies may assume a rather important place in the study of disease. Especially so when their misplaced position or function so acts upon the rest of the body as to bring untoward results. Other anomalies are of no more importance than that of scientific interest and curiosity, having no actual bearing upon the economy.

THREE ANOMALIES

I wish to cite three anomalies. 1. The styloid process, protruding into the sinus tonsillaris and producing no harm whatsoever; only being accidently recognized after the tonsils had been removed. 2. The carotid artery pulsating behind the tonsils. This was rather important, in that it showed the possible danger in operating in a situation of this kind, and proves the necessity of a thorough study of the tonsillar anatomy including that of the surrounding structures before advising their removal. 3. A supernumerary tongue; this is of unusual rarity, and I believe the first case on record. It had to be removed because it was interfering with the respiratory function.

The styloid process is part of the hyoid bar (from the second branchial cleft) which joins the temporal bone under cover of the vaginal process. It is thick at its origin but presently becomes thinner ending in a sharp point. It is usually about one inch long but varies greatly. It runs downward, forward, and inward, and is continued as the stylohyoid ligament to the lesser cornu of the hyoid bone (Piersol).

In lower animals it appears that the size and shape of the styloid process depends upon the amount of tongue motion present in that particular animal. The styloid process of the horse is comparatively short and slender, and the tongue motility is correspondingly small. In other animals like the ox or dog, the styloid process assumes rather large proportions. In some animals it does not end in a point, but is flat and often doubled at its free margin, forming a strong base for muscular attachments. In these animals the tongue motion is found to be great. (These

suggestions have been made to me by Dr. Lentz of the veterinary department of the University of Pennsylvania.)

The following is a case presented before the Philadelphia Laryngological Society:

Case I.—Mr. T. G., aged twenty-nine, came to me with a history of several attacks of pain in the joints following an attack of tonsillitis over a year ago. The family history was negative. The previous medical history, scarlet fever at the age of five, several attacks of follicular tonsillitis. Under apothesine (one half of one per cent.) local anesthesia, by the dissection and snare method both tonsils were removed. On inspecting the tonsillar fossæ, a protrusion was noted on the lower lateral walls. On palpation, these were found to be pointed hard and about half an inch in length. The diagnosis of styloid process protruding into the sinus tonsillaris was made. The patient made an uneventful recovery.

There are cases on record (and probably many that have not been recorded) where the carotid or some other large vessel has been injured during the socalled simple tonsil operation with fatal terminations. Before citing the next case I can do no better than repeat verbatim the conclusions of Dr. J. Parsons Schaeffer (1).

1. It would appear that, in addition to a painstaking inspection, careful palpation of the tonsillar field should be practised in all cases preliminary to a tonsillectomy, in order to judge the nearness of large or aberrant bloodvessels. The red flag of danger appears when the superior constrictor muscle and the thin buccopharyngeal fascia are inadvertently torn in operative procedures.

2. The large artery frequently visible in the wall of the oral pharynx and in intimate topographical relationship with the palatine or faucial tonsil is usually a redundant and tortuous internal carotid. The common carotid stem in the absence of the internal carotid, the external carotid, and the ascending pharyngeal and the ascending palatine arteries, likewise, at times, give rise to visible pharyngeal pulsation.

3. The redundant or tortuous internal carotid artery and agenesis of the internal carotid proper, represent a reversion to more primitive types.

4. Age has no bearing on the development and presence of a tortuous internal carotid artery.

Case II.—F. K., aged seven, came to the Howard Hospital dispensary, with a note from the school doctor, asking for a tonsillectomy. The family history was negative. Previous medical history, measles and one attack of tonsillitis. The heart and lungs were normal. Examination showed the anterior cervical to be glands palpable. The teeth were clinically negative. The tonsils did not protrude in front of the anterior pillars. There was no pus on pressure. The anterior pillars were not adherent to the tonsils. Many crypts were seen. Behind each posterior pillar and running parallel to them a pulsating vessel was noted. The size of the pulsating vessel was about that of an ordinary lead pencil. It could be traced to a little above the soft palate, then seemed to disappear outward and forward. After consultations with Dr. Wood, Dr. Hunter, and the rest of our staff, we decided to refer this child for x ray treatments, believing the operative risks too big. Several x ray treatments produced in my opinion no appreciable diminution in size of the tonsils, some of the staff, however, thought there might be a slight reduction in size.

This case of the supernumerary tongue is of interest because of its extreme rarity. I have been unable to find another case like it in the literature. Specimen presented before the Section on Otology and Laryngology, College of Physicians and Surgeons of Philadelphia. By courtesy of Dr. Wood.

Case III.—The patient, S. C., aged ten days, was brought to my office by Dr. A. with the following history: Dr. A. delivered the child and soon after birth noticed a difficulty in breathing, especially on inspiration. A peculiar noise or gurgling sound was heard continually. The child was almost continually cyanotic. The breathing became easier on holding the head low down. After several attempts Dr. A. was able to notice a foreign body in the throat and then brought the child to my office.

Examination showed the following: Weight seven pounds, mouth open, breathing noisy, floppy and gurgling, retraction on the supersternal notch and spaces between the ribs. Examination of the throat showed a peculiar body lying in the pharynx, more toward the left, parallel to the long axis of the pharynx. Breathing caused it to move either up or down or to slip over the tongue, bringing itself into plain view. When lying on the tongue this body appeared the duplicate of the tongue, so much that Dr. A. and myself both agreed that it was a case of double tongue. The child breathed almost normally as soon as this mass was grasped and held forward. On inserting my finger I found that the mass sprang from the left pharyngeal wall behind the left posterior tonsillar pillar on a level with the soft palate. By means of a snare this mass was removed as near as possible to its base. It was then sent to the pathologist of the Howard Hospital, Dr. John D. Paul, for examination and report, being careful not to tell the pathologist that we thought it was another tongue. His report is attached hereto. The child is almost a year old now and is in perfect health.

The specimen is a moderately firm, elongated, pinkish gray mass measuring 3.5 by 1.2 by one cm. The tip and edges are rounded. The posterior end is contracted like a pedicle. The posterior surface is slightly rough and in its posterior third the midline is marked by a shallow groove. The anterior or inferior surface is more smooth than the upper and marked in the midline by a slightly elevated ridge.

Microscopically this mass consists of principally vertical, transverse, and longitudinal striped muscle fibres running approximately at right angles to each other. This muscle tissue is surrounded by squamous epithelium resting on a tunica propria which is in turn supported by a submucosa of loose connective tissue. On the upper of posterior surface of the mass there are numerous mushroom like elevations of the connective tissue covered with a thin layer of squamous epithelium (fungiform papillæ). In the deeper portions of the tunica propria and in a few instances down between the muscle bundles are a few tuboalveolar glands lined with low cuboidal epithelium resting on a delicate basement membrane.

The specimen has the gross and microscopic appearance of a tongue.

2009 Pine Street.

Practical Therapeutics

A SUGGESTED MEANS OF ADMINISTERING CHLORINE GAS WITHOUT SPECIAL APPARATUS*

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The purpose of this brief note is not to discuss the merits of chlorine gas in the treatment of diseases of the respiratory tract, but simply to suggest a convenient, safe method whereby the patient may be given the gas at home or elsewhere when his physician considers it an appropriate remedy. I devised the method while searching for an expedient to use in a welfare case, which I will summarize briefly.

CASE.—The man, H. H., a clerk, in late middle life, had neglected a cough and hoarseness which had persisted during an indefinite period and was more noticeable to others than to himself. He was tall and thin, of cheerful disposition, inclined to be vacillating, and tended toward the blond rather than the brunette type. In August, 1923, a diagnosis of chronic, advanced pulmonary tuberculosis of both lungs was made by a local Board of Health clinic and was confirmed microscopically. Conditions were particularly unfavorable hygienically, since he was too weak to work and therefore was compelled to live in an unhealthful city street in a cheap tenement over a damp, earth cellar. A family of young children added to his distress mentally and his wife was unable to secure employment sufficiently lucrative to support a home. He was thus an object of charity and largely dependent upon the gratuities of associations and neighbors.

The local Board of Health sent him to a sanatorium, but he was put to work there, he asserted, and was physically unable to endure the labor. At any rate he returned to his squalid home in much worse condition than when he left it, and soon afterward experienced two hemorrhages in quick succession. Shortly after this episode he set out to visit the public clinic again, but collapsed on the street *en route* and was taken to a hospital by ambulance. He again returned home, and lapsed into a state of profound prostration which the visiting physicians, sent him by a benefit association, considered terminal. In talking with some of these gentlemen afterward about the case they all stated that they considered it hopeless and that he was practically moribund. At this crisis a brother in the West offered to provide funds for his removal and maintenance in the country, but it was doubted whether he could safely be moved even to a railroad train.

This human and unfortunately too common tragedy, brought casually to my attention by a friend, led me to suggest that perhaps chlorine gas would hold the disease in sufficient abeyance and permit him to recuperate to a degree that would enable him to take advantage of his brother's offer long enough, at least, so that he might die in decent surroundings. Then arose the question of administration. I decided to try evolving the gas from solution by spreading this over a considerable, freely exposed surface. To this end I obtained from a dispensary a supply of a solution of the Carrel-Dakin order, as a possible source of free chlorine. A medium sized Turkish towel thoroughly soaked with this presented a surface area for dissipating the gas and was suspended a few inches above the patient's head. A knot in the lower end guarded against possible drip. The patient lay quietly at ease in bed, the window open sufficiently to insure normal ventilation.

The odor of the gas was plainly perceptible on the floor of the tenement house below, yet he experienced no discomfort, inconvenience or irritation whatsoever. It would obviously have been a simple matter to adjust if he had. The exposure was continued throughout the entire twenty-four hours on each of the succeeding days, and after the third day a distinct change occurred in the sputum. Instead of the ugly, bloody spectacle presented in such cases the expectoration gradually increased in quantity, though the attacks of coughing did not, either in number or severity, and became glairy, transparent and more homogeneous. The blood gradually disappeared. Little by little the cough decreased and sleep improved, so that at the end of about three weeks he habitually slept all night. Upon waking there would be a period of coughing characterized by free expectoration without exhausting, racking effort, and after that he would be troubled very little with cough throughout the day.

By degrees another change supervened in the sputum, manifested by a brown discoloration, possibly due to the granular débris of dead material undergoing disintegration or solution. At the end of about a month he was up and about rather more than was good for him and contrary to advice, so that he improvised, himself, certain modifications of the towel method. For example, he made a paper cone, lined it like an old fashioned ether mask, and sat at his window inhaling from it. This, I felt, was a possibly risky method, especially since, to use his own words, he "just poured on the solution and dug his nose into it." However, he was none the worse for his experiment, and at the end of six weeks, using the gas *ad lib.*, all pain, soreness and discomfort had disappeared, so that he could take his breath "all the way down," as he put it.

At about this time he decided to visit the Board of Health clinic and made the trip, a considerable ride on street cars, without effort, he said, denying any weariness. Needless to say he had been provided with good reconstructives during his treatment. Immediately afterward he crossed the city to tell me of the event, very happy indeed. He said that they had seemed greatly surprised when he came in, and much more so at his greatly improved state. The doctor who examined him, rather perfunctorily at first, he declared, "listened, cocked his head, and then got down to business." Then, it seems, they all examined him and plied him with many questions as to what he had been taking, how he took it, where he obtained it, and advised him by all means to con-

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tinue. The verdict was, he said, that the left lung had "cleared up" and that the right was very bad indeed but very much better. About a week later he went to a resort in the lower Adirondacks and wrote that he was "feeling fine."

I venture no predictions concerning this case. The most I can say is that he survived a crisis that apparently was terminal, and that since the only change in food, hygiene or treatment consisted in the addition of the extemporized method of giving him chlorine as described, we are justified in crediting that method with efficacy in this particular instance. Since this patient was unquestionably benefited, others to whom I have suggested using the gas in the same way, as well as I myself, have tried it in other cases ranging in severity from simple coryza to graver and more chronic infections of the respiratory system, with encouraging results, so that I feel justified in suggesting the method for further trial as a useful expedient.

It presents, also, certain advantages which are, briefly, the total elimination of danger from storage or supply tanks; no special apparatus is required; it is available practically everywhere, in bed at home, for example, at any and all times; the gas can be administered, if desired, continuously throughout the twenty-four hours, which is well worth considering when one reflects that the number of bacteria destroyed or inhibited during the conventional short exposure is nothing in comparison with the number that may be reproduced during the balance of the twenty-four hours; sufficient air interchange is not interfered with since the gas gravitates downward and thus tends to minimize loss; the method is practically fool proof; and what is in some respects most important, seems to permit a lower dilution for a longer period without irritation than is possible with the chamber method. And there is still one more point worth considering, for not only does the patient receive the gas, but so also do contacts, prophylactically. It seems to exemplify the tried and true doctrine that best results are obtained by small doses oft repeated.

Naturally, the relative percentage of gas obtainable by this extemporization will depend largely upon the size of the room and the chlorine solution selected. In the particular case I have cited the room was a small one. As for the solution, we have tried different kinds with varying degrees of success, but those which have been prepared electrolytically seem most efficient. This may be because in such solutions the gas is nascent rather than molecular, probably, or because there is bound to be present a certain amount of free oxygen also. At any rate, there is no question that more available free gas is obtained.

Admittedly the method suggested is lacking in technically scientific merit. But that is no reason for denying the benefit of it to suitable cases in which the patients otherwise would not get the gas at all. One would hardly let a man bleed to death in the street because of the lack of a scientifically constructed tourniquet with accurate pressure gauge refinements. He very certainly would adopt any convenient expedient, and I am simply offering this, also, as a possible aid and even a lifesaving improvisation.

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DEFICIENCY OF THE HALOGENS IN MODERN DIETETICS*

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(*Concluded from page 176*)

Susceptibility to disease, at least in rats, depends upon constitutional factors, not the least of which is the thyroid's ability to function effectively. Child presents evidence that "susceptibility and recovery vary in general directly with, though not necessarily proportionally to, the rate of oxidative metabolism" (16).

It is hardly necessary to carry these suggestions further. There is ample material for an analysis of underlying conditions in simple goitre, cretinoid types, nervous and neurotic manifestations, rachitis and beginning epilepsy, all suggesting that there are dietetic deficiencies. Correction of these may result, possibly, even in a modicum of cancerous prevention. Suboxidation, with the consequent disturbance of normal cell activity through imbalance of required minerals and salts, appears to be present in all of the conditions outlined above. It is generally agreed, furthermore, that the predisposing factors of infection and the physiological conditions causing hyperactivity of the thyroid may all contribute to a depletion of the stored thyroxin. The keynote is sounded in one short statement of Klein's (17), viz., "if the demand is too great, pathological changes ensue," and Marine maintains that active hyperplasia or disease of the thyroid occurs if the iodine content falls below 0.1 of one per cent.

Consequently, it would seem to be the path of prudence to adopt some method by which a sufficient halogen intake could be assured the thyroid, at least in the stress of emergency. This has been rather startlingly corroborated at the Mayo Clinic, by the practice adopted within the last few months of iodine feeding to hyperthyroids immediately after radical operation. Plummer reports (18) the occurrence of no deaths since the establishment of this régime. This test also throws light upon the futility of adding fuel to the flames of a toxic goitre which, as Janney (19) groups it, is a dysfunctioning gland with its consequent faulty hormone. Evidently not all hyperthyroids are dysfunctioning glands—part of them reveal a hypertrophy comparable to the hypertrophy of the overworked heart, and gradually return to normal, clinically, upon the ingestion of available iodine. "The hypertrophy is probably due to strain on a dysfunctioning gland" (19).

To consider for a moment the practicability of attempting to assure a well nourished thyroid by means of supplying additional halogens as an aid to general oxidation and cell activity, Janney has emphasized that "The chief function of the thyroid is the generation and regeneration of the tissues by action of the thyroxin on protein metabolites" (19). As to the origin of thyroxin he says: "All evidence tends to indicate that the thyroid hormone is a synthetic product." Further, "It is certainly built up by the thyroid from inorganic iodine," and so on.

Kendall (20) who first uncovered the active principle of the thyroid elaboration thyroxin, states as to

*Read before the Southwestern Pediatric Society, November 7, 1923, and the Los Angeles County Medical Association, April 17, 1924.

its function that, "By its activity practically every cell in the organism is changed; the effects are felt throughout the nervous system and the circulatory system, the rate of metabolism is enormously increased, and even the skin and hair show revolutionary changes." Again he says: "The function of the glands must be some single chemical reaction which is necessary for the life of the various cells and tissues of the organism."

This "single chemical reaction" product, which Kendall isolated, and now generally known to contain some sixty per cent. iodine, depends upon the ingestion of inorganic iodine as a direct precursor of the elaborated crystalloid iodine of the thyroid, according to researches now clinically accepted. It is superfluous to add that no gland can synthetize its particular product unless sufficient precursors are available. How insufficient in halogen content is our common dietary and how frequently the demands of the present day high tension struggle may exhaust thyroxin reserve, is generally not appreciated.

Accepting the evidence of cellular dependence of the system upon thyroid hormone and noting the effect of insufficient iodine from which this hormone is built, the next logical step is to determine practical ways and means by which the thyroid gland can be adequately fed, and thus restore normal function.

One differentiation in practical application should be borne in mind. Uhlenhuth (21) says: "Inorganic iodine is ineffectual in reactivity of the thyroid hormone, but it is the only substance which can be used by the physiologically active thyroid in the elaboration of thyroxin." To paraphrase, the artificial or natural ingestion of inorganic iodine can be used only as an aid to secure normal physiological function, but not to restore a pathological thyroid gland. Assuming that this premise is true, still it does not detract from the possibilities of farreaching effects upon abnormal conditions which come under the classification of disease, so long as the thyroid gland itself is not diseased. In other words, the formidable group of abnormal symptoms, which are familiar results of hypothyroidism, we may rationally expect to alleviate, provided we administer assimilable halogens to an underfunctioning but not to a patently pathological thyroid gland.

Skinner, of Yakima, Wash. (22), reports congenital goitre caused by iodine deficiency in the mother as rather common. He reports its practical elimination by feeding iodine to pregnant mothers. If it were routine to feed an amount of available iodine approximating half the normal intake of the thyroid during alternate weeks, or in amounts adjusted according to physical and mental condition, or depending upon the special demands made upon the thyroid —if this were routine, there is a rational basis for expecting less ultimate thyroid disorders.

Many symptoms exhibited in children, such as malnutrition, retarded or imperfect dentition, rachitis, asthma, bronchitis and eczema, or revealed in dry skin, cold extremities or multiple adenitis, may be manifestations of subthyroidism which we are accustomed to so group only if definitely showing retarded mentality or marked degenerative stigmata. The clinical picture needs to be clearly defined in one's mind and to be differentiated from that group for which exact laboratory technic is known.

To estimate the existing organic iodine in the circulation is at present too technical, consequently the method of approach must be necessarily different and the possible results will be at times delayed because of this inability to apportion rightly the required elements. But in all apparent physiological imbalance, if, with slight subthyroid manifestations, or if indicated by the usual symptoms, the mental concept of a possible dietetic deficiency be kept clearly in mind and the consequent patience and clinical requirements appreciated, there will be much of satisfaction and not infrequently brilliant corrections which will convince one that the thyroid often needs to be fed. The average amount required in terms of iodine apparently varies in clinical need from one thirtieth to one sixth grain of some nonirritating, stable, inorganic preparation administered once daily, two to five days in each week. The amount is later decreased until finally the indicated quota is determined. This implies physiological balance rather than increasing doses to tolerance as in exhibiting the iodides.

To establish this hypothesis, a perfected blood test making possible the estimation of its iodine content would greatly facilitate its clinical use. Until such test is available, the careful clinical observance of results in indicated cases will produce cumulative evidence. Weight, pulse rate and subjective symptoms must be periodically noted for at least six months.

Before giving case records, a brief résumé of research reports published since the completion of this article, coming from three authoritative sources, seems peculiarly apropos. Their testimony gives added impetus to certain angles in "the hypothesis of a dietetic deficiency" and suggests farreaching possibilities in its correction:

1. Experience at the Mayo Clinic confirms an evident iodine deficiency in hyperthyroids.

2. Harvard Research Laboratory reports the iodine in glandular preparations to be apparently more effective than the extract of the balance of the gland (22) and raises the further question whether thyroxin, isolated, retains all of the physiological action of the real thyroid hormone as normally produced.

3. Rockefeller Research Laboratory reports tumor inoculation experiments in which resistance and immunity were paralleled by an increased physiological function of the thyroid. Increased function implies increased iodine elaboration; this in turn implies necessary availability of thyroxin precursors in our daily food.

TO EPITOMIZE THE HYPOTHESIS IN BRIEF

1. Federal Geological Survey of iodine bearing soils and waters reveal vast areas depleted of their original halogen deposits.

2. Areas in which this deficiency is most complete, correspond to the socalled goitre belts, in other words, diseased thyroids accompany deficient iodine.

3. Not alone definite disease of the thyroid but multiple complexes dependent upon dysfunctioning thyroids arise through this halogen deficiency.

4. This gradually increasing hyperplasia of all thyroid glands receiving insufficient iodine, not only produces ultimate destruction of the gland function,

but during this period of its lessened activity allows a disturbed physiological balance which opens the door to active invasion. This invasion may cause the host to succumb by ceasing to inhibit activity of embryonic rests, may cause him to be overwhelmed by acute bacterial invasion or merely allow him to drop far below his normal level physically and mentally.

5. Consequently the physiological balance of this halogen deficiency requires essentially a food for the thyroid gland, not adequately found in our modern diet.

6. Laboratory tests in animals apparently confirm this hypothesis.

CASE REPORTS

Case I.—*Type with no functioning thyroid gland. (Cretinism.)*—A. K., aged twenty-six months, female, Hebrew, family history negative, labor at term, uneventful. The child's development attracted no attention until six months, when she was taken to Dr. G., New York, for examination and a diagnosis of cretinism resulted. The child thrived under usual thyroid administration, and when referred to me at the age of eighteen months, was developing satisfactorily.

Inorganic iodine was administered and the substitutive thyroid extract was withdrawn to determine if true cretinism existed. During this period of thirty days, the child gained two and a half pounds, grew pale and flabby, while the facies assumed the characteristic appearance of the cretin. Stupidity was evident.

A return to the organic extract produced a rapid amelioration of all symptoms, sufficient to indicate continuous substitutive therapy and the inability of the child's glandular system to elaborate its own thyroxin. X ray report: "Sella turcica considerably larger than normal anteriorly and with hypertrophy of both anterior and posterior clinoids."

Case II.—*Type with underfunctioning thyroid gland and inability to attain balance through ingestion of thyroid extract. (Cretinoid.)*—F. C., aged seven and a half years, female, Hebrew, family history negative. The child lacked ambition, was tired and had an indifferent appetite, disposition was listless. The child showed no desire to play with nor meet other children. The mother's complaint was of the child's color—unhealthy tan with yellowish tinge around hair of forehead and pallor around mouth and nostrils. Examination revealed weight four pounds over the average, eyes dull, skin and hair and nails dry, muscles flabby moderate postcervical glandular enlargement, lips slightly pale, tongue coated, tonsils enucleated at three years. Nasopharynx revealed mucus discharge, ears negative. Pronation with beginning valgus of both feet was noted. A metabolic test was not made. Orthopedic shoes relieved foot strain, correction was made of diet and hygiene, tonic doses of thyroid extract were given. During the subsequent two years the child made fitful progress, exhibiting cumulative effects apparently from thyroid ingestion or glandular impurities included in the dried tablets. Finally carefully tried out amounts of inorganic iodine were administered with the almost immediate result of a beginning restoration to normal which terminated in evident health as indicated by skin, membranes, secretions and activity. The mother's comments emphasize the child's improved condition of hair and skin with the remark upon activity that, "Now F. climbs trees." The child seems in perfect health merely from ingestion of a sufficient amount of iodine for her underfunctioning thyroid gland to produce sufficient thyroxin. Unlike the patient in Case I, this child seemed absolutely unable to assimilate a substitutive thyroid product yet exhibited the clinical picture of hypothyroidism.

Case III.—*Nervous instability.*—M. L., aged seven and a half years, female. The mother, who was of more than average intelligence, reported that for the past two years spells or temporary loss of consciousness had occurred at approximately monthly intervals and that the child's reports from school had been correspondingly less favorable. History and examination revealed no factors of importance except that the family dietary included insufficient halogens and minerals with their possible bearing upon this evident nervous instability. Two other children in the family, however, suffered no apparent lack, nor did they exhibit nervous instability upon a similar diet. After two months, during which an attempt had been made to equalize possible salt and mineral requirements, there resulted absolute freedom from nervous imbalance and her school reports were the best of the three children. To this date after eleven and a half months, no break has occurred in her restoration to an apparently perfect balance. No sedative nor drugs were administered.

As a corollary to this case—it has been stated that "two other children in the family suffered no apparent lack. A brother two years older with a pulse rate of one hundred had infected tonsils enucleated and adenoids removed without affecting the pulse rate after a three months' interval. The temperature was normal. Effect of iodine administration will be noted after corresponding interval which has not yet elapsed.

Case IV.—*Functional hyperthyroidism.*—C. G., aged fifteen years, male. The child's mother had a goitrous tendency, revealing slight enlargement but no associated symptoms. The patient had had measles at five years, fracture of humerus at thirteen years, whooping cough at fourteen years. Temperament sanguine with superior artistic and musical ability. Sleep easily disturbed and difficulty in getting to sleep. Sea foods were not available on account of inland residence.

Physical examination revealed height of a child of sixteen with weight fifteen pounds below average for that height. Body type slight but with chest expansion of two and a half inches. Vital capacity was normal at 2300 c. c., blood picture normal, systolic pressure slightly subnormal, a thyroid gland slightly hypertrophied in right lobe. There was superior mental activity. The pulse rate was 102. There was an inability to gain weight normally. Occasional attacks of nervous indigestion, apparently the symptom complex of a dysfunctioning thyroid gland.

Until recently the simple expedient of furnishing available material for additional thyroxin elaboration had not seemed a rational procedure. Under administration of one tenth grain daily alternate weeks for six weeks he made greater weight gains and slept

better during the iodine weeks, his pulse came down to 90, and his weight increased four pounds six ounces during that period. An apparent result of correcting the physiological deficiency in halogen bearing foods.

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Treatment of Pruritus Vulvae.—P. Werner (*Wiener klinische Wochenschrift,* March 27, 1924) believes in the endocrine origin of pruritus vulvæ, especially in the influence of the ovaries. Röntgenotherapy, on the whole, has been disappointing. Observations show that the pruritus is more or less intimately associated with the climacterium and pregnancy and the menstrual periods. Treatment should be directed toward the endocrine system. The occasionally good results obtained with local x ray therapy may be due to simultaneous action on the ovaries. The treatment consists in the administration of ovarian gland substance as injections over a long time. Good results may also be obtained with x ray treatment of the ovaries and hypophysis. Irradiation of the thyroid gland seems to be futile.

Treatment of Pruritus Vulvae.—S. Wiener (*Surgery, Gynecology, and Obstetrics,* December, 1923) offers a new treatment for this condition, based upon the belief that the itching is due to an irritation of the nerve endings, and that the consequent scratching gives rise to a vicious circle of cause and effect which must be broken into to effect a cure. The treatment follows:

The technic employed is very simple. The skin and subcutaneous tissue along the outer border of the labia majora are continuously infiltrated with a one per cent. solution of novocaine. Eight cubic centimetres are used at one sitting, four cubic centimetres being injected on either side of the vulva. No curative effect is attributed to the novocaine. Its purpose is merely to render the infiltration itself painless. The curative action is attributed rather to the mechanical effect of the infiltration, and could doubtless be achieved, though in a less painless way, with salt solution. All cases have been readily treated in the out patient department. The injections have been repeated at intervals of a week. No patient has received more than five injections; in some patients from one to three have sufficed. The results have been distinctly encouraging.

Effect of X Rays on Leucemia.—As a result of his investigations Paul Szilárd (*Wiener Archiv für innere Medizin,* April 1, 1924) comes to the conclusion that the cause of the socalled secondary effect of the roentgen rays may be attributed to the fact that the electric charges, the electrons, which penetrate the body during the irradiation from the tube and circulating in the blood stream, reach every part of the organism and also exert their destructive influence upon distant and not directly irradiated sensitive tissues and organs. There was a slightly more active destruction of normal leucocytes by the serum from leucemic patients than with normal serum. The leucemic cells were destroyed much more readily than normal cells by any other serum.

Intravenous Injections of Urotropin Solution (Forty Per Cent.) in Postoperative Urinary Retention and Cystitis.—C. Pasch (*Zentralblatt für Gynäkologie,* March 29, 1924) obtained some very good results with intravenous injections of forty per cent. urotropin solution in the prophylaxis of postoperative ischuria and cystitis. This form of prophylaxis was applied in minor and major gynecological operations, both vaginal and abdominal, and also in protracted labor and after obstertical operations. The usual dose is three to five c. c. The indications are postoperative urinary retention or ischuria several days after operation. Improvement is seen after two to ten hours. This procedure avoids the use of the catheter and subsequent bladder infection. Cystitis due to the colon bacillus responds readily to this treatment. For prophylactic purposes the injection should be given three to four hours after the operation. No ill effects were observed.

Curative Dose of Antimony Tartrate in Schistosomiasis (Bilharzia Disease).—J. B. Christopherson (*British Medical Journal,* December 29, 1923) asserts that thirty grains of antimony tartrate, administered over a period of twenty-eight to thirty days, remains the curative dose of schistosomiasis for an adult. Cases of long standing may require a modified second course of thirty grains. The fact that the symptoms have cleared up and no ova (or no live ova) are found in the urine is in itself no indication to suspend injections until the full dose has been given. Antimony tartrate commences to stop the ova appearing in the urine at about five grains. At ten grains some of the ova which appear in the urine are dead. This drug acts on the ovum (the motor mechanism) first, and also affects the worm so as to suspend its egg producing activities; but the worm is not killed till later—if too little antimony is given it recovers and recommences egg laying, and hence a relapse takes place after an apparent cure.

Historical Medicine

Hippocratic Nephritis

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Having been betrayed into a study of Hippocratic and præ-Hippocratic anatomy of the kidneys and into some citation of Aristotle's statements on the subject by an interest in the curious belief, which prevailed in and before the time of Hippocrates, that fluids when swallowed passed into the lungs, I have incidentally made notes of what the Hippocratic authors have to say of kidney disease. This it may not be devoid of interest to have arranged in some attempt at sequence here.

The modern conception of kidney disease so largely centres around the problem of metabolism, it is so closely affiliated with systemic and general circulatory disturbances, the biochemistry of the subject has so alienated our ideas even from those of a generation or so ago, that we have no cause to be surprised in finding the Hippocratic conception is almost exclusively a surgical one. The chief interest centres around stone in the kidney, so frequently associated with the symptoms also of stone in the bladder. It is singular, but indicative of the very ancient interdict laid on those who practised medicine not to cut for stone, that no word is said on this subject while the advice is frequently given to cut for kidney abscess caused by kidney stone. We may well be astonished how boldly the Hippocratic surgeon is advised to make deep incisions for the relief of this condition. It impresses us with the feeling how disastrous it was to confine an operation for the removal of stone in the bladder, offering such prompt and ready relief from suffering, to persons unskilled in the art of medicine. There is no satisfactory explanation why this operation had so moved the distrust and suspicion of ancient men as to cause its prohibition to be included in the medical oath. Nothing so arbitrarily and so unjustly has interfered with the exercise of surgery except the superstition which tabooed dissection of the human structure.

Scarcely less interest is manifested in uroscopy as a prognostic and diagnostic resource in other than kidney affections: "When there is a farinaceous sediment in the urine it indicates a protracted illness (1), but when the urine is thin at first and then the sediment becomes bilious acute disease is indicated (2). When the bubbles settle on the surface they indicate disease of the kidney (3), so also of a fatty scum" (4) and much more which is Greek or foolishness to us. But that the ancient profession was alive to the opportunities of this kind, open even to them unaided by our science and our scientific apparatus, an author, perhaps a sophist layman, writing of *The Art* (5) declares, saying: "It judges of the secretions by their odor, color, consistency, and from these draws conclusions as to the conditions of which these are the signs, some showing a place already diseased, some those which are liable to be attacked." In the Coan Prænotions, from which doubtless some of the aphorisms were directly or indirectly culled, we find this art in full bloom and the Coan Prænotions, all agree, were older than Hippocrates II. For thousands of years uroscopy was an important part of diagnostic observation, probably ever since man used a vessel into which he passed his urine. Constant examination of this even by his unaided senses and comparing it with the patient's state we may well believe brought an acuity of recognition we have long since lost owing to our neglect of naked eye diagnosis for the more profitable one of the test tube and the microscope. It was like the pulse; the ancients could see things in the urine with their eyes as they could feel things in the pulse which with our bare fingers we can not. The modern scoffer may shrug his shoulders and add contemptuously, "thought they could," but we too "see things" in the test tube and the sphygmograph and *The Art* in those days was probably no more of a gesture than it is today. It is still said to be an art—not a science.

None of us will venture to say these sententious prognostications in any age are always justified by the event, but with the tactile sense for the quiver of the pulse gone we have also lost their solution of the mysteries that float in the urine. The new uroscopy is not infallible and with the passing of the old uroscopy we have lost that skill, such as it was, of the ancients, those men as acute minded as we, who found wisdom in the Coan Prænotions, the oldest of all our records, which helped them. It still may be made to flash for us and we see the flash of the old diagnostician, whoever he was who wrote: "Patients who only void their urine when told to are in great danger" (6) and we know how true is the aphorism (7) "Nephritis as well as cystitis is difficult to cure in the old." We see, too, that the Coan practitioner knew well that suppression of urine is apt to have as a sequel headache and some times spasms (8). He knew, too, the cure is difficult but the case is not necessarily fatal. He knew, too, the suppression of urine in this case is to be differentiated from that caused by stone or thickened urine (9). We get clear indications of renal complications which make the severer forms of malarial fever so dangerous. "When, after the urine has had a good sediment it has none, there is an indication of a painful change and the urine having as a sediment a troubled deposit points to a chill near a crisis and a change to a tertian or quartan fever" (10). Relating elsewhere (11) a case an author remarks in a tertian fever after several months there was a complication with the kidneys which persisted, this diagnosis, so far as appears, being based upon pain in the lumbar region. There are clearer indications elsewhere (12) and in a way the varieties of kidney disease are discussed. In the Hippocratic as well as in the Galenic physiology the black bile originates in the spleen. Besides the kinds the pains represent there is a third in which the urine, accord-

ing to the observer, looks like the juice of beef. Blackwater fever is still a doubtful disease variety of malarial regions and here we are left still more in doubt as to the diagnosis, but as he advises putting the patient for forty-five days on a diet of milk and whey, we seem justified in thinking of the severe and dangerous fevers of the swamps of the Congo and the Amazon, occurring here around the Mediterranean in the time of Hippocrates.

In a fourth variety (13), which he believes is due to excessive coitus, besides lumbar pains, the urinary sediment is sometimes white and sometimes bile colored, but when the patient lies on the unaffected side he experiences discomfort and pain. Possibly this was a case of enlarged spleen, but that hardly meets all the indications of the history.

More acute disease is possibly betrayed in the aphorism: "Whenever in a thick urine there are small flesh like hairs, these are cast off by the kidney," but when there are thick scales in the urine he thinks these are due to scabies or psoriasis of the bladder (14).

Notwithstanding these indications of kidney involvement in the general circulatory affections with which we now connect it and its complication of other diseases and even a hint of a comprehension of disease which is neither a complication nor a surgical affection, the most stress is laid upon the phenomena of kidney stone and abscess. If the patient passes pus and blood in the urine, this indicates ulceration of the kidney and bladder and whenever blood spontaneously appears in the urine it signifies the rupture of a vein in the kidneys. If he passes clots in the urine and has strangury and pain invades the hypogastrium and perineum he has trouble around the bladder. In various aphorisms (15) these and other signs of inflammation and neoplasm are recorded, and in the book on *Generation* (16) we may suspect gonorrhea in those exercising coitus who have blood in the semen. The Hippocratic author, however, ascribed this to ulceration of the kidneys.

"But whoever has sandlike sediment in their urine these have stone in the bladder." This classical indication of stone in the bladder as set forth in the Aphorisms (17) is repeated in various places, in various ways, but in the *Internal Affections* we have the subjective signs set forth (18) of stone in the kidney. Sharp pain in the region of the kidney and in the perineum and flank and in the testicle of the affected side, frequent micturition, with gradual diminution of the urine which becomes sandy, intermittent and thick. There is severe pain in the urethra as the sand passes, relieved when the urination is over, but aside from this pain affects the penal part of the urethra." Many physicians familiar with the disease, when they see the sand in the urine think the stone is in the bladder but it is not, it is in the kidney. "This disease arises from the phlegm. Whenever the kidney receives the phlegm and does not discharge it, it collects within it. This becomes like gravel."

As for the treatment, the diet is to be regulated. Warm baths and hot fomentations are to be used for the pain. The patient was recommended to drink a quart or more of salted pea soup or white bean soup. But if a swelling occurred—cut down over the kidney and let out the pus and use diuretics to get rid of the sediment. If you don't use the knife the patient will die. This is the first of the kidney diseases mentioned in the *Internal Affections*.

The second kind of disease of the kidney seems to have been an abscess starting with a hemorrhage from the vein of the kidney itself, resulting in ulceration of both. Again the advice is to cut down on the kidney and the result will be good if you strike pus and bad if you do not, leaving an unhealed wound. Then the patient is liable to die.

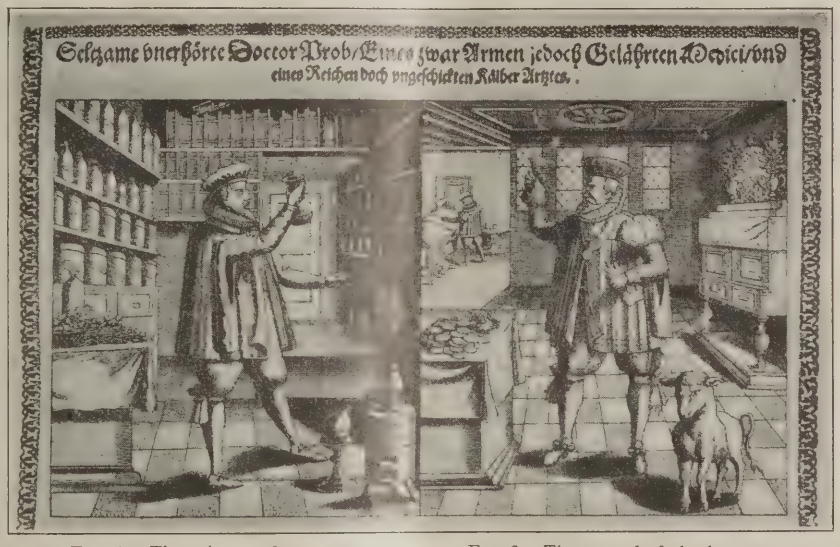
Seltzame vnerhörte Doctor Prob/Eines zwar Armen jedoch Gelährten Medici/vnd
eines Reichen doch vngeschickten Kälber Arztes.

Fig. 1.—The science of uroscopy. Fig. 2.—The reward of charlatanry.
(*From Peter's Arzt und Heilkunde*)

It is impossible to identify the pathological conditions on which some even of the striking symptoms depend. "Those in whose urethra caruncles grow and suppurate and break off and appear in the urine" (19) may have suffered from papillary tumors of the bladder. It is also not at all clear it was a case of kidney disease the author had in mind in the interesting account given of the régime to be applied to the man overfed and under exercised or it may be that in this condition the author recognizes a fertile cause for what used to be called idiopathic nephritis. Shortly it is this. Divide his customary food into ten parts. The first day deprive him of one part and make him walk ten stadia (somewhat over a mile). Next day, take away two parts of his food and make him walk twenty stadia, and so on until the man is down to one tenth of his usual food and is walking more than ten miles a day. Then increase his daily nourishment and shorten his physical exertions by the same gradations until the bon vivant is allowed to celebrate the termination of his discipline by an hilarious banquet (13). This was the way to get the man of Athens or Corinth fit, but the

modern health moralist has a right to demur at the high flier being led by as gentle steps back to his full trough as those by which he was made to depart from it. There are signs that this system of regimentation has been applied without much discrimination in the recommendations for the after treatment of severe surgical kidney trouble. Apparently it is here a clumsy interpolation. For a convalescent it is little short of grotesque, but with some modification of the return journey to gourmandizing it seems a method not altogether dissimilar to some of our training camps for the over fed. It has features decidedly improvements on the course pursued in some of them. The gradual elimination of the intake and cautious increase in the exercise is not always a prominent enough feature in our modern outdoor gymnasia.

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Contributors to the Science of Medicine

Chervin, a Pioneer Epidemiologist

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For almost forty years there has been hidden away in an iron box in the Army Medical Library, at Washington, a pile of priceless manuscript. Through the courtesy of the librarian, Brigadier General Robert E. Noble, and the kindness of Mr. Felix Neumann, who brought it to his attention, the writer has been afforded access to this collection, which represents about five years of earnest epidemiological research, and one of the earliest applications of the questionnaire to the study of pestilence.

Nicolas Chervin was born of agricultural parents, at Saint-Laurent-d'Oigt (Rhone), October 6, 1783, and, after pursuing his preliminary studies in the College of Ville de Franche, chose for himself the profession of Commerce. His parents consenting in his choice, he went to Lyon with a letter of recommendation which has been given him by M. Fournas, the father in law of the celebrated artist, Ellevain. After he had presented his letter, he went with one of his fellow pupils, named Petit, a student of medicine, to attend a lecture on anatomy which was being given by Professor M. Montain, and by this unthoughted act his entire life career was altered. The lecture was upon the sphenoid, the keystone of the cranium, one of the most bizarre bones in the entire human framework and at the same time one of the most difficult of description, but Montain's recital was so clear, so methodical, and at the same time so finished that Chervin was struck with admiration. It had never before occurred to him that any part of the human body could be so interesting, so wonderful.

For a few days he was depressed and undecided as to what course to take; but, says Rougier, "to use an expression of a religious sect, he felt the impulse of the medical spirit and consecrated his body and mind to the study of our art."

Chervin was a man of energy,and having seen the way, he set out to follow a resolution which he kept to the end of his days, never faltering in his thirst for medical knowledge. He enrolled himself as a student of the Hotel Dieu of Lyon, and there he followed, with that painstaking exactitude which was one of his characteristics, the curriculum of that great institution. Later he went to Paris, where he received his doctorate in 1812. He chose for his thesis a curious title: *Medicophilosophic Researches into the Causes of Polygamy in Warm Countries,* in which he controverted the theory that this practice was due to the excess in the number of women in the tropics. At this time France was in throes of the Napoleonic epoch; the empire was being attacked on every hand, and the homeland was menaced with invasion. Not only was the army of France being killed by the bullets of the enemy, its soldiers were being decimated by typhus fever, which was then prevalent in most of the military hospitals. The Government sent many young physicians to the epidemic centres for the purpose of studying the disease and assisting in the treatment of the infected. Chervin was appointed a member of the commission which went to Mayence, a location in which typhus fever was spreading with extreme violence.

Upon the declaration of peace, Chervin returned to Paris, where he entered practice, devoting one or

two days a week to clinical studies in the hospitals: and again a small circumstance altered his plans and directed the current of his life into another channel. He was in the habit of lunching with several of his friends, physicians who were pursuing their clinical studies in the hospitals. One day the conversation in this informal lunch club turned upon the question of whether or not yellow fever was contagious. Many of those present believed that it was, and one of his friends expressed himself very strongly in this belief. Chervin, who was possessed of a healthy, scientific skepticism, said he was not at all convinced that yellow fever was contagious. "But do you know that?" queried he of the strong affirmative opinion. "I am going to prove it," said Chervin. "But not on the banks of the Seine," was the reply.

With characteristic promptness and decision, Chervin sold a part of his patrimony, and with the little money thus acquired, but an enormous fund of courage, patience and energy, he set out upon his quest. Unfortunately, a journal of these wanderings is not included in the pile of manuscript at the Army Medical Library, but it has been possible to map out more or less accurately a part of his itinerary from these documents.

Apparently he first visited Guadeloupe; on November 24, 1817, he was at Pointe-Pitre, and on the 30th he was at Basse-Terre—a curious coincidence, this, since the latter was the birthplace of Louis-Daniel Beauperthuy, who on May 23, 1854, in the official gazette of Cumaná, Venezuela, announced the discovery that the mosquito with white striped legs is the vector of yellow fever. Beauperthuy was born at Basse-Terre August 25, 1808, and he was therefore a little over nine years old at the time of Chervin's visit to Guadeloupe. It is not inconceivable that the presence of such a distinguished foreigner as Chervin, in such a small place as Basse-Terre, was known to Beauperthuy, and his boyish mind thereby imbued in some degree with the desire to take up scientific research, a field in which this great medical naturalist was to achieve posthumous renown.

The next year, 1818, was devoted to wandering up and down the Antilles and the other islands of the Caribbean, Martinique, Antigua, Nevis (the birthplace of Alexander Hamilton), Montserrat, St. Kitts, St. Eustatius, St. Martin, St. Thomas, St. Croix, Barbados, Porto Rico, Santo Domingo and Jamaica being visited. In 1819 he was in Cuba and Haiti, and on March 1, 1820 he is found at New Orleans, La., where he remains at least three months. In November he is in Savannah, Ga., and from December 20, 1920 to January 9, 1821, he is in Charleston, S. C. March, 1821, finds him in Norfolk, Va., and Washington, D. C.; in April in Baltimore; in May and June in Philadelphia; and in November in New York. Connecticut, Rhode Island, Portland, Me., Newbury Point, Mass., and New Hampshire, were visited in the last month of that year. Then he returned to the Islands of the Sea, and the latest date in the manuscripts is in August 1822.

Wherever he went he examined everything in the locality which might have a bearing on the epidemiology of yellow fever. He studied the climate, the seasons, the habits of the people, and their customs. He visited the hospitals, he attended the sick, and studied the effect of disease as shown in the bodies of those who had died from it. He interrogated physicians, army medical officers, navy medical officers, quarantine officials, hospital superintendents, magistrates, and the inhabitants of every class, including the negroes and slaves. All of this labor was performed most minutely; he was scrupulously methodical in the collection of his data. To each of the medical men whom he interviewed, he gave the following questionnaire:

QUESTIONNAIRE

Avez vous observe des faits, que provenent, que le fievre jaune soit contagieuse?

Pensez vous, qu' deprimer le devenir dans certaines circonstances?

Quelles sont, suivant vous, les causes le plus ordinaires de cette maladie?

Pensez vous qu' une meme personne peut-etre ataquée, plusiers fois de cette maladie?

The replies to which were written on sheets of paper ten by twelve inches, and before he left the place where he had collected them they were bound together by colord silk ribbons which were passed through three holes in the left hand edge. These were then certified as authentic documents by some person having legal authority to make such certificates. Sometimes it was a British Governor General, and in one instance the seal is a circular piece of wax over two inches in diametre, having a sheet of paper on either side, and being embossed with the royal arms of Britain. Frequently there was a certificate from the president of the medical society, stating that certain physicians were members in good standing. The certificates taken at Washington, D. C., were certified to by the French Ambassador, Baron de Neuville. Thus there is preserved in this collection the authenticated signatures of many of the leading medical men of the new world at that time.

These documents are exceedingly interesting. Physicians tell their experiences in certain outbreaks of yellow fever, and they relate many circumstances which would be of the greatest value to anyone who was collecting the material for a biography. For the most part, the handwriting is beautifully clear. There were no typewriters in those days, and people apparently had more time; certainly, they took more pains with their chirography; as a result, the reading of these manuscripts is relatively easy, and also there is a thrill in almost every page. They are written in English, French, Spanish and Dutch. Apparently Chervin mastered the English language in the course of his investigation; there are many notes in his handwriting written in that language: for example, when he was in New York he copied a great many of the minutes of the City Board of Health.

In the learning of English, Chervin pursued the accurate, painstaking course which may be observed in all of the acts of his life. There is a list of about 275 words and phrases which he has collected under the title: *"Liste de mots anglais peu usités ou plutôt qui me sont peu familiers."* A perusal of these shows that he had gotten well beneath the skin of the American tongue. The following excerpts, spelled exactly as they are in the little folio, illustrate this:

Hey; to jog on; tucked up; hawked about; to bantter;
with a hop, skip and a jump; fiddle faddle, topsy turvey;
rapping of kuckles; plung down the money; wen-goitre;
to hum and haw; a lucky hit.

Although Chervin examined hundreds of patients in hospitals, made observations on their condition both by day and by night, being exposed to the black vomit and other dejections, attending necropsies, and being in every way in the presence of the contagion, if such existed, he never contracted the disease. In this he was a good deal more fortunate than that celebrated Italian epidemiologist, Eusebio V. Valli, who came to Havana for the purpose of studying yellow fever. He landed on September 7, 1816, and on the 24th of the same month was dead of the disease.

An analytical study has not been made of the data which was obtained by Chervin in the Caribbean littoral. At a later date this will be done. Practically every one of the physicians whom he interviewed in the United States was of the opinion that the disease is not contagious—that is, that it is not spread from a sick person to a healthy one by contact. They frequently note the fact that while doctors, nurses, attendants, ministers, sextons, and the families of those who have yellow fever, were not more liable to the disease than other persons, and from this they reasoned very properly, that the disease was spread by some other agency than intimate contact. The introduction by ships was carefully noted, especially by quarantine officers or Health Officers of the Port, as they were called in that day, but Pardon Brownell of Providence, Rhode Island, wrote on December 10, 1821, that he did not believe that the disease was introduced by ships from foreign ports, but was generated by them.

The minds of some of the physicians were evidently still impressed by "the unity of fevers," but a considerable number make the differentiation between yellow fever and bilious fevers very clearly. For example, William Bowen, of Providence, Rhode Island, writing on December 12, 1821, of the outbreak of typhus icterus of August 1787, said, "I judged it as a higher grade of our common Summer or bilious fever from which, however, it is essentially different, the one being but partially, if at all, mitigated, while the other is totally suspended by Frost." There is little accurate differentiation between yellow fever and malaria, some thinking that they are merely different manifestations of the same disease, but several beliving that they are separate and distinct infections. Several speak of having had yellow fever themselves, and the clinical descriptions of the disease set forth in the replies to the questionnaire, prove very clearly that although the writers had relatively little knowledge of epidemiology, they were exceedingly keen clinical observers.

The cause of yellow fever is variously attributed, many holding that it is a disease of purely "domestic origin," "calmness of the air and decomposition of animal and vegetable matter"; "effluvia from ballast"; "decomposing codfish and the noxious effluvia therefrom"; "the pestilential atmosphere engendered on ships"; all being named as etiological agents. William Ingalls of Boston wrote a long letter (including a meterorological table), saying, "Yellow fever is not generated at sea or far inland." He expresses the view that effluvia and sea water raised by hurricanes into the air, mix and produce a dangerous stimulant. The action of the "vertical rays on the sun on odure" is frequently mentioned in these letters.

Josephus W. S. O'Conway, U. S. N., writing on May 8, 1820, describes an outbreak which occurred on the U. S. Schooner "Firebrand" at Belize in July 1817, and states, "The vessel was almost alive with cockroaches, their scent was suffocating, and all our provisions smelt of it. This is a strong proof of vitiated atmosphere."

H. R. Frost of Charleston, South Carolina, in his letter of January 3, 1821, expresses the opinion that yellow fever, which he believed is not a disease suis generis, is due to the "mephitic gases, produced by the vertical rays of the sun, this in turn causing a deficiency of the atmospheric electricity." In a rather hasty survey of the material, mosquitoes were only seen to be mentioned once, and that in such a way as to show that the writer had no idea whatsoever of their possible connection with the disease. It was noted by quite a number of observers that certain areas seem to be immune to the disease, and one writer quotes an observation made in 1809, "that those who slept in the upper stories of houses were less liable to the disease, and had it in milder form, than those who slept on the ground floors."

Dr. George Marshall of New Orleans, writing under date of March 26, 1820, sets forth some views of the etiology of the disease, which are interesting in the light of our present knowledge. At the time he was secretary of the New Orleans Medical Society. In 1812, he had charge of the U. S. Naval Hospital, temporarily established in the Bay of St. Louis and in 1813 he was attached to the U. S. S. *Louisiana*. He says:

> Domestic animals and those of the Forest are frequently affected with a variety of disease during the prevalence of an epidemic, and even the vegetable Kingdom does not always escape unhurt. The following is an extract of a letter from my friend, Dr. Perlee of Natchez, in October, 1819: "As to the report of our domestic animals dying, it is partially true. Our horses, horned cattle, poultry, and even the Deer in the woods, have been very generally affected with a disease seated in the tongue. It has not been very fatal except to poultry on some plantations, but as respects human sufferings we have indeed had a severe visitation."

Strangely enough, there are still a few sanitarians who believe that animals may act as a reservoir for the infection of yellow fever.

Having completed his researches in the new world, Chervin returned to Paris, where he took a modest little room in the Rue Villedo. From all accounts, he was not prosperous, and lived in his scantily furnished rooms, surrounded by his books and the documents which he had secured in his epidemiological quest. But he was scarcely settled in this apartment in which he was to live for many years, before he learned that yellow fever was epidemic in Spain. He hurried there to carry on his studies, going to Cadiz with Louis and Trousseau, as a member of a

commission appointed by France to study the epidemic of yellow fever, then prevailing. He carried on further studies in the Midi and on the Peninsula, and from there went to Barcelona, where other French investigators had succumbed to yellow fever.

In 1824 Chervin returned to Paris, with the intention of staying there only six months, but he remained for nineteen years, excepting when he went to Gibraltar in 1828, again to study yellow fever. Upon his return, he was decorated with the Legion of Honor. His name was then presented for membership in the Academy of Medicine. Unfortunately, the permanent secretary of that body, Ettiene Pariset, an epidemiologist who had made a considerable study of miliary fever, yellow fever and plague, belonged to the contagionist school, so far as yellow fever was concerned, and as early as 1828 he and Chervin had a controversy over the latter's conclusions with regard to yellow fever. These were:

1. Yellow fever is not contagious.
2. It has for its origin and cause the altered air of swamps, obstructed drains, and the exhalation arising from slimy stagnant waters.
3. It acquires its greatest violence by the excessive heat inherent to certain climates and certain seasons.
4. Lazarets and quarantines which are onerous for governments and prejudicial to commerce, neither serve to prevent, nor to lessen the violence of the infection.

Pariset's divergence from these views caused Chervin's name to be subjected to critical examination when he was proposed for membership in the Academy, but a commission of eighteen members having examined his documents, declared unanimously that they were of great value, and proved conclusively the noncontagiousness of yellow fever. This report provoked a long discussion in the Academy, but in 1832 Chervin was elected to membership. A few years later he received from the Academy of Science a prize of ten thousand francs from the Montyon Foundation. Finally, the campaign of education which Chervin launched had its effect, and the Government, by the ordinances of April 4 and June 11, 1835, and November 13, 1839, modified its sanitary regulations with regard to quarantine, and reduced the period of detention of ships very considerably.

The latter years of Chervin was not happy ones; sickness, age and poverty beset him. He was afflicted with heart disease, and on February 8, 1842, he suffered from a cerebral hemorrhage which produced hemiplegia; on August 14, 1843 he died at Bourbonne-les-Bains, whither he had gone in search of relief. His friends chose for his epitaph a passage from Tacitus: *"Opum contemptor, recti pervicax, constans adversus metus."* By his life, and by his ability to work, Chervin justified this portrait.

Measured by the terms of modern knowledge, Chervin's was a life of lost endeavor. He made no basic discoveries, and his writings did not contribute greatly to the sum of human knowledge. He did, however, set an example of painstaking, methodical, scientific research, in an era when men were more apt to theorize about a disease, than to study it on the ground. Success is not always the criterion of the worth of a man; endeavor, rather, is the standard: and the courageous, unending effort which Chervin put into his work, entitles him to great credit. To the medical profession of America, he has left a splendid heritage in the manuscripts which were prepared by the leading physicians of our country more than one hundred years ago, and the student of medical history and medical biography will there find authenticated documents of the greatest value and interest.

The Growth of Psychotherapy and the Evolution of Psychoanalysis.—Dr. Albert Polon writes (*Mental Hygiene,* January, 1924) that psychotherapy is of very ancient origin, dating back to the dawn of civilization. "Not unlike religion, it represents one of the most universal products of the human mind. On all levels of culture, at all times and among all peoples, it is found to play an important rôle in alleviating suffering. For primitive man, it represented practically the whole of his therapeutic armamentarium, based upon the notion that disease is an invasion of the body by some malevolent spirit, which accordingly must be driven out by spiritual means, such as magic or religious procedure. In antiquity it came to be separated from actual treatment by being accorded a place as a preparation or as a stage preliminary to the application of medical measures. . . . This character it retained throughout medieval times, when religious faith was regarded as indispensable for the efficacy of surgical and medical measures."

In the early part of the modern epoch (sixteenth century), there was an increasing recognition of the importance of the imagination in curative procedures. The emphasis, however, was upon the special powers of the therapist, from whom presumably the therapeutic influence emanated. This belief was the basis of Paracelsus's "personal magnetism" and of mesmerism. The element of charlatanism in Mesmer's work tended to repel science, and so much that might have been valuable in his discoveries was not utilized for many decades.

Psychotherapy as a scientific procedure is a comparatively recent arrival among the medical branches. Its beginning probably dates from Charcot's application of hypnotism to the removal as well as to the production of hysterical phenomena. Charcot's pupil, Pierre Janet, established the mechanism of dissociation of the personality, but progress remained blocked by the still prevalent notion that hysteria was a defective state of the brain.

The next notable advance was made by Bernheim of the Nancy school, who came to the conclusion that the whole phenomenon of mind influence is entirely the result of suggestion. In 1893, Breuer's report of the case of Fräulein Anna was published, with its light on the procedure of emotional catharsis. This procedure was elaborated by Freud, who had been a pupil of Charcot and Bernheim, and the theory of the sexual origin of neuroses was added. Freud also substituted the socalled association method for the emotional catharsis, and later the free association method, which step marked the abandonment of hypnotism by the Viennese school of psychotherapy and laid the foundation for the psychoanalytical method.

Editorial Articles

THE PERIL OF PUDDING

More than one distinguished authority on diet has declaimed from the housetops against the food of civilized communities and especially against the diet of the growing child. Not the least celebrated of these is Dr. Harry Campbell, of London, who has persistently preached the doctrine that the food of civilized human beings, and of the younger generation in particular, is not adapted to its necessities or needs. Not only is it lacking in constituents and elements essential to sound health but its consistency is also gravely at fault. The ideal diet should be of a quality adapted to the life led by the individual.

The out of door manual worker is able to digest and assimilate, not alone with impunity, but with advantage to himself, a bulk of food material which would be disastrous to the sedentary worker and the one who does most of his toil with his brains. The manual worker and he who spends the greater part of his time in exercise in the open air can consume and benefit by much larger quantities of meat protein material and carbohydrates than the person who lives chiefly indoors.

Climate again plays a prominent part in the selection of a suitable diet. However, these are points which if not so frequently heeded as they should be, are more or less known to all. The question for discussion here is the ordinary diet of civilized people of the English speaking race under ordinary conditions.

Dr. Harry Campbell, a modern Don Quixote perhaps in this respect, never misses the opportunity to tilt against the windmills of custom as regards modern diet, and his strictures apply even more forcibly to this country than to Great Britain. He inveighs in no measured although in strictly scientific terms against the habits of eating of the older and especially of the young generation of these days, the soft stodgy food, made largely from grain which has been deprived of its outer covering containing the vitamines and other valuable elements.

This often predigested food affords no exercise for the teeth and jaws, which they were obviously intended for, with the consequence that they lose their powers through lack of use. Moreover, the digestive functions tend to become lax and slow and even aborted because there is no call for their activity. Thus the food material arrives in the intestines in a condition of comparative inertness greatly aggravated by the fact that on account of there being little or no rough material in the food there is also weak peristaltic action, and chronic constipation and chronic intestinal stasis ensue. This preponderance of soft food is injurious, too, to the teeth themselves, lodging itself in the interstices, and is a factor in the production of caries and possibly of pyorrhea alveolaris.

In this country the huge consumption of candy and saccharine material by adults as well as children may be characterized as a distinct menace to health. The eating of candy to excess by children is a fertile, perhaps the most fertile, cause of teeth decay and is harmful to the digestive functions and to the gastrointestinal tract generally. The undue consumption of pappy food and of saccharine matter sets up or increases a vicious circle. The gastrointestinal tract falls into disorder, oral sepsis sets in, the one reacts on and aggravates the other until the vicious circle is completely established and alimentary toxemia with its numerous sequelæ is the result.

In Great Britain a few months ago a conference on education was held and one of the subjects debated was Diet as an Essential Factor in Education. A Mr. Hecht took a leading part in the discussion and avowed himself an uncompromising opponent of the stodgy soft monotonous diet of the age, but confessed that he could not conceive how children at school could be taught to see the error of their ways while their teachers set them so bad an example. Mr. Hecht averred that in Great Britain, at any rate, that as the teachers did not know how to feed themselves intelligently how could they be expected to feed children properly. According to Mr. Hecht the teacher, when a student, is fed upon a stodgy monotonous diet, eats the stuff too fast, and in his greed is prone to "afternoon tea and midmorning snacks," thus offering to students of dietetics spectacles of tragedy.

To the perhaps jaundiced eye of Mr. Hecht more pernicious by far than the untimely snack or cup of tea is the milk pudding which he regards as the bane of the race, the serpent in our paradise. However, although the British teacher quoted above is inclined to employ the language of hyperbole in descanting on the diet of the school boy or girl, of the embryo teacher, or of the full fledged teacher, his views, on the whole, are right or strongly tinged by common sense. There is no doubt that a great deal too much soft food, highly milled bread, the outer covering of the grain should always be left in the flour, too much liquid drunk with meals, including iced water and black coffee, and too much candy eaten in this country by persons other than teachers, but who lead a life as sedentary and more self indul-

gent. The salvation of the American as regards his diet compared with the Briton, and which counterbalances largely the greater amount of exercise taken by the average business and professional man in Great Britain, is his greater consumption of uncooked ripe fruit, which helps to make up for the lack of vitamines in his other articles of diet.

Cooking in civilized countries is often a drawback to good health. As a rule, food is cooked too long and some of the nutritive or health giving properties are depreciated or destroyed, vitamines for instance. Several vegetables as the salad vegetables should be made whenever possible a customary part of the diet. However, as Kipling might say, that is another story. No excuse is required for dwelling on the question of diet at such length, for unsuitable food and eating too much of it are responsible for causing or exciting into activity in those predisposed a very long list of diseases or conditions of invalidism. In the prevention of disease diet is a dominating if not the predominating factor. The modern diet table and modern methods of preparing food require revision and although "Peril of Pudding" may seem an absurd title for a medical editorial if but taken for what it is intended to be as a synonym for the soft vitamine lacking foods so widely used nowadays, it is quite timely and to the point.

THE EFFECT OF METHYL GUANIDINE ON BLOOD PRESSURE

The rise of blood pressure has been attributed to several causes. Many authorities now believe that not only hypertension but some other forms of faulty circulation or of heart disease are due to toxic influences initiated or promoted or initiated and promoted by metabolic disturbances. Further, it is held by some that these metabolic disturbances are owing to gastrointestinal troubles which eventually reach the stage of chronic intestinal stasis and a poisoning of the system.

In *Johns Hopkins Hospital Bulletin,* May last, is an article by Ralph H. Major and Walter Stephenson of the University of Kansas School of Medicine recording some experimental investigations made by them as to the effects upon the blood pressure of methyl guanidine. The investigators point out it is evident that any product of metabolism able to produce a striking rise in the blood pressure, could, if not excreted properly, induce very marked changes. It has been suggested that such a substance may be responsible for the high blood pressure observed in essential hypertension, in chronic nephritis, and in allied conditions such as eclampsia.

Rutscher and Lohmann first described the presence of methyl guanidine in the urine of normal individuals. Achelis described its presence in the urine of the dog, horse and man, pointing out that, although the horse eats no creatinine, he excretes considerable quantities of methyl guanidine. Roch noted the presence of guanidine compounds in the urine of dogs which had been subjected to parathyroidectomy. Noel Paton and Findlay described an increased urinary output of guanidine compounds in tetania parathyreopriva and idiopathic tetany, and Findlay and Sharpe and Mattrass and Sharpe found an increased excretion of dimethyl guanidine in idiopathic tetany. Sinalnicoff and Boxshik in a brief summary describe a present effect of dimethyl guanidine. Their results resemble closely those obtained by Major and Stephenson.

The experiments on dogs by Major and Stephenson showed not only the prompt rise of blood pressure but its persistence. Another point was that section of both vagi produced no increase in the heart rate and no change in the blood pressure as noted previously by Sinalnicoff and Boxshik, which fact points to a powerful vasoconstrictor effect of methyl guanidine as the most probable cause of the marked hypertension. Several records of the effect of methyl guanidine upon the blood pressure in man were obtained. The substance was injected intravenously in doses varying from .045 gm. to 0.8 gm. per kilo. No unpleasant symptoms, aside from a sense of slight fullness in the head and a slight pounding of the heart, were noted. The systolic and diastolic blood pressures were promptly elevated and these elevations persisted for one hour. The investigators think as a result of their experiments and those of others that methyl guanidine if produced in excess in the body, or if not excreted by the kidneys, might cause a rise of blood pressure.

As stated, if poisonous substances of putrefaction are found in the intestines to excess, possibly by long continued constipation, the entire system may be likely to be affected by these toxins, and high blood pressure may be one of the results. If this be so, such a condition may be prevented from occurring by suitable diet and by healthy habits of life generally and especially by paying proper attention to the functions of excretion and elimination. Also the condition when developed may be remedied or greatly relieved by taking the necessary steps to encourage and maintain satisfactory elimination and excretion.

The probable presence of substances in the urine capable of exercising a profound influence on the blood pressure has been and is being discussed by numerous investigators. The results of the experiments at the University of Kansas tend to show that methyl guanidine in the urine in excess if not excreted by the kidneys may be a cause of high blood pressure. It seems possible that such excess may

be brought about by the prolonged retention in the intestines of waste food products with resulting toxemia, and the treatment indicated would appear to be that stimulation and excretion are promoted and as far as the urine is concerned it should be disinfected as far as is possible.

A REMARKABLE WOMAN SURGEON

The first woman to take the M.D. of London University has just published her reminiscences at the age of seventy-eight. Dr. Scharlieb was born in London in 1845 and in 1865 married Mr. Scharlieb, an English barrister, practising in Calcutta and went out to India. Impressed and distressed by the sufferings of a large section of Indian women during childbirth, the caste prohibitions prevent them from having the services of male doctors, she studied midwifery in the Anglo-Indian hospitals.

Eventually she prevailed upon the authorities to permit her to study medicine and in 1877 secured a license to practise from the Madras Medical College. Dr. Scharlieb returned to London in 1878 at the time when the women's fight for medical privileges was at an acute stage. The famous Mrs. Garrett Anderson had started the campaign in 1860 and was joined eight years later by Mrs. Jex Blake. These women, the advance guard of the suffragettes, based their claims on sex equality, which in the mid-Victorian days when women to seek publicity was thought positively indecent, was highly unpopular.

However, after a vigorous battle lasting for more than sixteen years, an Act of Parliament was passed enabling women to obtain degrees in medicine and qualifications in surgery. In 1874 Mrs. Garrett Anderson founded the School of Medicine for Women in Bloomsbury, London, which remains the only one in England restricted to women, and in 1877 the Royal Free Hospital nearby opened its doors to women students in training at that college. At the present time Dr. Scharlieb is president of the college. It was not, however, until 1908 that the Royal Colleges of Physicians and Surgeons agreed to grant their diplomas, and it is only quite recently that the former college has opened its fellowship to women.

In India, Dr. Scharlieb was the pioneer in reforming conditions in such a way that the native women were enabled to have the services of doctors of their own sex. In 1887, owing to ill health, she left India never to return and has since practised in London as a leading consultant in diseases of women.

Dr. Scharlieb's *Reminiscences* are of great historical interest and, in addition, is an intriguing human document. Although in America and Great Britain the movement to make legal the status of the woman doctor and to remove the disabilities which formerly hampered her scope of activity is comparatively new, in some other countries there have been women medical practitioners for ages.

The best description of the history of women in medicine is given by Mme. Melanie Lipinska, *Histoire des Femmes Médicins*. As a matter of fact Dame Trot, so well known to children, is a corruption or abbreviation of the name Trotula, the illustrious authoress of several noted books dealing with female ailments who flourished as far back as in the eleventh century at the most famous medical school of medieval times, that of Salerno in Italy. It is said that extracts from her works and descriptions of her operations show that she was a capable obstetrician and gynecologist. Women in medicine from the point of view of history should provide a fascinating study.

As regards the future of women in medicine, in spite of the fact that Dr. Scharlieb was a pioneer, indeed something of a revolutionist, she is imbued with mid-Victorian ideas and believes that woman's sphere in medicine or surgery should be comparatively circumscribed. She insists that the true *raison d'être* of medical women is to deal with midwifery and the diseases of women and children. She practised what she preached. However, Dr. Scharlieb is extremely optimistic as to the future prospects of women in medicine and surgery, that is, within the limits of what she deems is their particular province, holding that there is ample room for their services both in private practice and in public health work in Great Britain and especially in India. She points out that in women as in men character and personality are of equal importance with medical knowledge. Book work, and she might have added laboratory work, and ability to pass examinations are not sufficient in the makeup of the capable practitioner. The treatment of the sick demands other qualifications.

HOME HOSPITAL CARE FOR CONSUMPTIVES

A ten year demonstration of the home hospital plan for the treatment of tuberculosis has been conducted in New York City by the Association for Improving the Condition of the Poor. Recently the association has issued a report on this work. The tests were carried out at the home hospital at 315 East 158th Street. Here, when a parent was stricken with tuberculosis, the entirely family was put under medical supervision. This plan is considered not only more effective and more humane than most other methods of caring for the tuberculous, but is also equally economical to the community. When tuberculosis appears in a family, the usual routine places the father or mother in a sanitarium, and the

children in a preventorium, in a foster home, or with friends or relatives of the family. The patient is likely to worry separated from his or her family, and progress is retarded; or he hastens to leave the sanitarium before recovery is complete. "The home hospital," says the report, "is a demonstration of the results which can be secured by housing the tuberculous patient and his family in a wholesome environment, by supplying the family with sufficient relief to provide for an adequate standard of living, and by providing the necessary medical and nursing care, not only to insure the recovery of the patient, but to prevent tuberculosis from occurring among those members of the family who previously had not been afflicted."

When the home hospital idea was first promulgated, the objection was made by some that without complete segregation many new cases of tuberculosis would develop in the institution itself. Within the ten years' life of the home hospital, not a single case has developed while a family was in the institution. This is attributed to the education in health matters given by the hospital to all within its walls.

That the effects of the treatment are lasting is shown by the fact that practically sixty per cent. of the patients, in spite of their tremendous handicap, are able to assume full responsibility toward their families after discharge. Of those discharged as quiescent, practically eighty per cent. were found on the followup to be alive and productive.

ILLUMINATION AND THE HUMAN EYE

Conditions of illumination in our streets, public conveyances, homes, offices, factories, and public buildings are year by year becoming more important as problems for the physician, the hygienist, and the engineer. Charles Sheard, Ph.D., chief of the physics section of the Mayo Clinic, writes an interesting article in a recent issue of the *Nation's Health* on the values of light as they influence visual acuity and the demands made upon the visual organs. The chief rules given are the following: The first fundamental principle of good lighting is that the light shine on the object under gaze, not in the eyes of the observer; the best remedy is the use of diffusing glass globes, reflectors, or shades. The contrast of brightness should be kept within a ratio of one to one hundred; this means the adoption of indirect lighting or semiindirect lighting in which the brightness of the bowls is reduced. Localized lighting should be used only in conjunction with some good general system of lighting so as to avoid too marked contrasts.

An important point in illumination where close visual work is to be performed is to so arrange matters that the glare of reflection from polished surfaces is avoided. The eye works with approximate normal efficiency upon surfaces possessing an effective luminosity of about one lumen per square foot. Excessive illumination, as well as inadequate illumination, strains and fatigues the eye in the endeavor to secure sharp definition. Intrinsic brilliancy of more than five candle power per square inch should be reduced by a diffusing medium if the rays enter the eye at an angle below 60° with the horizontal plane.

Flickering, unsteady, or streaky illumination strains the eye in its endeavor to maintain vision. Ultraviolet radiation percentagely in excess of that present in daylight as well as infrared radiation from high temperature molten surfaces are to be avoided for hygienic reasons through the use of special protective glasses.

The psychological laws of association and suggestion should be regarded, since, if there is total absence of visible light sources and of shadows, there may be complaints. In natural lighting through windows, the windows ordinarily should be as large a percentage of the total wall area as possible. Window shades indiscriminately used are conducive to contrast and glare effects; translucent screens or shades are usually far better. Ground glass and such materials should be avoided in window sashes below the level of the eye as they cause an increase of brightness in the retinal images thrown on a portion of the retina unaccustomed to such brightness. Dark colored finishes, and dark walls and ceilings should be avoided if ocular comfort is desired, since glaring contrasts are likely to be introduced.

Illumination conditions are important factors in conserving vision and enabling the eye to function comfortably. If illumination conditions are good, and yet the eyes become fatigued and ache, then the remedy may be in the hands of those who make it their work to alleviate the refractive errors of the eye.

ALCOHOLIC MENTAL DISEASE

In an article on Prohibition and Alcoholic Mental Disease, by Horatio M. Pollock, Ph.D., statistician of the New York State Hospital Commission, and Edith M. Furbush, statistician of the National Committee for Mental Hygiene, the following conclusions are stated as justified by the data presented in the article. This article appeared in the *American Review* and was reprinted in the April issue of *Mental Hygiene*.

Alcoholic insanity in this country is now much less prevalent than it was in 1910, but more prevalent than in 1920. The rate of decline since 1910 has been greater among women than among men. The reduction in alcoholic cases is due in part to a change in the habits of the people and in part to restrictive laws.

The rate of alcoholic insanity is much higher among the foreign born than among the native white population, and is extremely low among native women of native parentage. The rate is higher among negroes than among native whites. The enforcement of prohibitory laws is largely a matter of changing the more or less fixed habits of our foreign born population.

The rate of alcoholic insanity is much higher in cities than in rural districts. There is practically no alcoholic insanity among women in rural districts. Alcoholic insanity occurs principally in advanced middle life, following several years of excessive drinking. With respect to education, economic condition, and marriage, patients with alcoholic insanity do not differ greatly from the general average adult population.

LUNCHEON TO OVERSEAS MEDICAL REPRESENTATIVES

Many medical men representing the United States and the British Dominions overseas have visited Great Britain in connection with the British Empire Exhibition. In order to take part in welcoming these distinguished medical visitors the *Lancet* on July 17th gave a luncheon in their honor at the Hotel Victoria, London. Sir Ernest Hodder-Williams, C.V.O., the chairman of the *Lancet,* presided, and welcomed the guests in a witty speech. He referred to the fact that although physicians had dosed him frequently with nauseous concoctions he was not going to get his own back on the doctors by making a long speech to them. He pointed out that the *Lancet* had celebrated recently its hundredth anniversary, and that during the time it had been in existence nothing was more remarkable than the way in which there had come into being a real unity of work and purpose in medicine among the English speaking peoples, a constant interchange of views and works to the immense benefit of medicine and mankind. British medicine recognized no sundering seas and in the paper which he represented more and more space would be devoted in the years to come to the record of the doings and attainments of overseas visitors.

Sir Squire Sprigge, the editor, also welcomed the guests and voiced his regret that had it not been that many of the medical men who had made the trip from overseas had been compelled by the call of duty to return, the gathering would have been even larger. As it was, the quality of the response was significant. He drew attention to the immense progress that had been made in journalism including medical journalism, since the establishment of the *Lancet.* The increased facilities of intercommunication had revolutionized foreign correspondence, and as an example of this he referred to the foreign correspondence of the *Lancet* one hundred years ago as compared to the present time. This was only possible because of the extraordinary goodwill of the people at the peripheral centres toward the people at the old centres.

Obituary.

ANDREW ROSE ROBINSON, M.D.

Dr. Andrew Rose Robinson, of New York, died on July 8, 1924, at his country home at Caledon, Ontario, Canada, and was buried at Boston Mills, near Toronto. Dr. Robinson was born in Claude, Canada, on July 31, 1845. He was graduated in medicine from Bellevue Hospital Medical College in 1868; he received the degree of M.B. at the University of Toronto in 1869, the degree of L.R.C.P. at the Royal College of Physicians of Edinburgh in 1870, and L.R.C.S. at the Royal College of Surgeons, Edinburgh, in 1870. He studied in London, Paris, and vienna, and received many degrees and honors.

ANDREW R. ROBINSON, M. D.

Dr. Robinson was a member of the New York Academy of Medicine, and of many local and national organizations. He was one of the founders of the Polyclinic Hospital, serving as vice-president, and also as treasurer, for many years, and in his late years acting as professor emeritus; he was also an early supporter of the New York Skin and Cancer Hospital, and later served as consulting professor; he was connected with the Memorial Hospital for ten years. He was foreign corresponding member of the Société Francaise de Dermatologie et de Syphilographie; president of the section for dermatology and syphilography of the Ninth Medical Congress, 1887; and also addressed the International Congress of Dermatology at its meeting in Berlin.

His writings were in French, English, and German, mainly on the subjects of dermatology and cancer. He wrote the prize essay for the Bellevue Medical College Alumni in 1877, on Sycosis, receiving the only money prize ever given by the institution. His greatest achievement was a *Manual of Dermatology,* published in 1884. At the time of his death, he was preparing another book. He worked untiringly on microscopic and pathological investigations.

Dr. Robinson's manner was simple and unassuming, and his patients looked upon him as friend as well as physician.

News Items.

Anthrax.—It has been estimated that twenty thousand head of livestock have been lost owing to the recent epidemic of anthrax in Louisiana, the worst outbreak since 1901.

Memorial Tablet.—A tablet is to be placed on the lawn of the city hospital of Fayetteville, Ark., by the Arkansas Medical Society, as a memorial to Dr. Welch, its first president.

Memorial Ward.—A maternity and children's ward at St. Joseph's Hospital, Far Rockaway, New York, is planned in memory of the late Dr. William L. Mulcahy, and funds are being raised.

New Scholarship.—An anonymous donor has given the University of Virginia Department of Medicine $15,000 to establish a scholarship in memory of Dr. Richard H. Whitehead, a former dean.

Rural Health.—The legislature of Massachusetts has authorized a study of the adequacy of medical service in rural districts. Dr. George H. Bigelow, of Boston, is chairman of the committee.

Iodine in Drinking Water.—A decision on the question of treating the water supply of Minneapolis with iodine, which has been under consideration for some time, has been postponed to permit further study.

Women Physicians in Japan.—The *Japan Medical World* reports that there are about twelve hundred women physicians in Japan, and that the Tokyo Medical College for Girls admits about one hundred and thirty students

New Convalescent Home.—A home for boys from ten to sixteen years of age, recovering from major operations and serious illnesses, is to be built at Valhalla, New York, in the Westchester Hills, by the Children's Aid Society. Funds for the land and the buildings are the gift of Mr. Dunlevy Milbank. There will be accommodations for about five hundred boys.

New Society Organized.—The Tuberculosis and Public Health Association of Louisiana has been formed, with Dr. William H. Seeman, of New Orleans, president; Dr. Hector E. Bernadas, New Orleans, and Dr. Julius Dupont, Houma, vice-presidents; Miss Anna Kennedy, secretary, and W. R. Irby, treasurer.

Public Health Service.—Examination of candidates for entrance into the Regular Corps of the U. S. Public Health Service wil be held September 15th, at Washington, Chicago, San Francisco, and New Orleans. Oral, written, and clinical tests will be given. Information may be received from the Surgeon General of the Public Health Service.

Children's Clinic.—To carry out the provision of the law that children in institutions shall receive thorough mental and physical examinations, an institution known as the Children's Memorial Clinic has been opened in Richmond, Va., with Dr. Basil B. Jones as director. The clinic will furthermore act as a clearing house for the children's health problems of the community.

Industrial Hygiene Lecturers.—The Division of Industrial Hygiene of the State of New York maintains two lecturers in the field who are ready to give to manufacturing plants illustrated talks on industrial hygiene and accident prevention. Inquiries should be made to the Division of Industrial Hygiene, New York State Department of Labor, 124 East 28th Street, New York.

Judges for Essay Contest.—Dr. Haven Emerson, Mr. Michael M. Davis, Jr., and Dr. Willard C. Rappleye have been selected as members of the committee for the awarding of the *Modern Hospital's* prize for an essay on "Interrelationships of Hospital and Community." Registration for the competition should be made to the Contest Editor, *Modern Hospital*, 22 East Ontario Street, Chicago, before September 15th.

Health Department Impostor.—A woman known as Mrs. Witt has been visiting farmers in the neighborhood of Davenport, Delaware County, New York, selling a book published by J. L. Cornish, who calls himself "Domestic Health Secretary." The book costs twenty dollars and promises to keep the purchaser "away from a doctor." Mrs. Witt poses as an agent of the State Department of Health. Anyone to whom she so represents herself is requested to telegraph the Department, collect.

Tuberculosis Conference.—The United States has been selected by the International Union Against Tuberculosis for its annual convention of 1926.

New Club Building.—The Medical Alliance, an organization of physicians, dentists, and pharmacists, has purchased a building on East Eighteenth Street, for a clubhouse.

Child Health Appointment.—Miss Emma Dolfinger has been appointed director of the health education division of the American Child Health Association, to succeed Miss Sally Lucas Jean.

Rush Medical College.—The old Rush Medical College of Chicago, built in 1875, is being wrecked in preparation for the building of the Rawson Laboratory of Medicine and Surgery, part of the new program of the University of Chicago.

Civil Service Examinations.—An examination for the position of technical assistant in sanitary bacteriology in the Public Health Service will be held on October 8th. The entrance salary will be $1,860, with advance without change in assignment up to $2,400. Application may be made to the U. S. Civil Service Commission, or to local examiners.

Coming Meetings of Societies.—The annual meeting of the Indiana State Medical Association will be held in Indianapolis, September 24th to 26th.

The New England Surgical Society will hold its annual meeting at Hartford, Conn., September 26th to 27th.

The American Chemical Society will meet at Cornell University, Ithaca, September 8th to 13th.

Reporting Cases of Puerperal Septicemia.—The Division of Maternity, Infancy and Child Hygiene, New York State Department of Health, is asking the cooperation of physicians in reporting cases of puerperal sepsis as well as deaths. Such reports are authorized under the Sanitary Code, but that there has been laxness is shown in the fact that in the period from 1920 to 1923, 1,148 deaths were reported but only 877 cases.

Foreign Visitors Study Health Work.—Dr. Vincent G. Babecki, of Warsaw, Poland, and Dr. C. F. Challappah, of Colombo, Ceylon, are in the United States studying health administration as guests of the International Health Board.

New Chair at Jefferson Medical College.—A new chair has been created at the Jefferson Medical College, to be known as the Department of Bronchoscopy and Esophagoscopy. Dr. Chevalier Jackson has been elected to the professorship, and Dr. Fielding O. Lewis has been elected to fill the chair of laryngology vacated by Dr. Jackson.

Personals.—Dr. John Bland Sutton, president of the Royal College of Surgeons, was a visitor in New York recently.

Dr. Leopold Jache, of New York, is chairman of the American Committee of Arrangements, in the plans for meeting of röntgenologists in different cities of England and Scotland, in July, 1925.

Dr. Harley A. Haynes has been appointed director of the University Hospital of Ann Arbor, succeeding Dr. Christopher G. Parnall.

Dr. Carl Arthur Hedblom, of the Mayo Clinic, has been appointed professor of surgery at the University of Wisconsin Medical School.

Dr. Robert C. Courtney, of Richmond, Va., has been appointed a member of the Governor's Advisory Board for Mental Hygiene.

Dr. Henry Hall Forbes, professor of laryngology at the Post-Graduate Medical School, New York, has been studying at the University of Bordeaux for three weeks.

Dr. Joseph Franklin Montague lectured before the proctological section of the Royal Society of Medicine on the subject of Pruritus Ani.

Dr. Smith Ely Jelliffe, as an official delegate from the American Neurological Association and the American Psychiatric Society, has returned from Europe after attending a meeting of the Alienists and Neurologists of France and the French Speaking Countries, held in Brussels the first week in August.

Dr. Leopold S. Vaccaro, of Philadelphia, has been honored by the King of Italy, by being made official chevalier of the crown. Dr. Vaccaro is director of the Italian Child Clinic, an instructor at the University of Pennsylvania school of medicine, and is on various hospital staffs.

The Allgemeine Krankenhaus

GUSTAV BAAR, M.D.
Vienna

Three hundred years ago the grounds enclosed by the Alserstrasse and Spitalgasse were occupied by a large county poor farm. In 1696 there were one thousand inmates, in 1724 over one thousand seven hundred. Empress Maria Theresia, in order to give some occupation to the inmates, introduced the raising of silk in the institution. It is a matter of record that in 1768 there were thirty pounds of pure silk produced. By various bequests, like the one of Dr. Johann Frank (1686), Baron Thavonat (1725), new additions to the poorhouse were erected. To Emperor Josef belongs the credit of having transformed the poorhouse into a hospital and medical school, after the plans of his physician van Swieten (1754). The hospital contained two thousand beds *Saluti et Solatio aegrorum.* (The old inscription is still legible over the main entrance.)

The first medical clinic (founded 1754) was headed by Anton de Haen; he was succeeded by Stoll, Reinlein, Peter Frank, Peutl, Hildenbrand, Raimann, Hildenbrand, Lippich, Skoda, Duchek, Nothnagel, Noorden. The second medical clinic (founded 1849) was held by Oppolzer, Bamberger, Kahler, Neusser. The third medical clinic (founded 1892) was held by Schrötter.

The first surgical clinic was held by Steidele, Kern, Wattmann, Dumreicher, Albert, Eiselsberg. The second surgical clinic (erected 1841) was held by Schuh, Billroth, Gussenbauer, Hochenegg.

The eye clinic was held by Beer, Rosas, Arlt, Stellwag, Schnabel; the second eye clinic (founded 1873) by Stellwag, Jäger, Fuchs.

Obstetrics came to prominence under Boer (1789), Klein, Braun, Schauta. A second obstetrical and gynecological clinic was inaugurated in 1874 by Spaeth, followed by Breisky, Chrobak, Rosthorn.

The height of medical fame was reached about 1840, when Skoda taught chest diseases (percussion and auscultation!) and Rokitansky occupied the chair for pathological anatomy in his newly built institution, adjoining the old hospital. It was then that physicians from all parts of the world migrated to Vienna, to finish their education. Vienna had become the Mecca of physicians. The principle of speculation was abandoned in favor of that of observation. In quick succession the new specialties arose: Hebra taught skin diseases, Sigmund syphilis. The chair for laryngology was founded 1869, for psychiatry in 1870, for otiatry in 1872; another psychiatry clinic was founded 1878 and a clinic for nervous diseases in 1899.

There were two thousand beds at the disposal of the teaching clinicians. According to the stipulation made by Emperor Josef, two thousand beds had to be maintained for sick people, prevented the use of space for other purposes, required by the evolution of modern medicine: laboratories, kitchens, nurses' and physicians' rooms, larger lecture rooms, etc. The maternity home located within the *Allgemeine Krankenhaus,* with eleven thousand confinements a year, took up too large a space—and there was no other maternity home to be had in Vienna. Nurses and many of the house physicians could not be housed within the hospital. This facilitated the spread of contagious diseases, and made isolation impossible. There was a time, when mortality from puerperal fever reached thirty-three per cent.—it was the same time that Dr. Semmelweiss tried to emphasize the importance of contamination in the etiology of puerperal fever, but met only with shortsightedness and prejudice on the part of his colleagues. Thus Vienna missed its chance of discovering the principles of antisepsis.

FIG. 1.—I to XIII are the thirteen courts, of which I to IX are in use now, while X is the old military pathological institute (Josephinum); XIII the former Garrison Hospital.
(1)—(55) are staircases.
1—90 are wardrooms.
□ are 32 lecture rooms.

Men, like Billroth, realized, that the time when Hebra, Skoda, Rokitansky, and Oppolzer were able to make their epochal discoveries in modest shacks, had gone by, that modern research required modern institutions, and opened their fight for an up to date hospital in 1889; Billroth's colleagues signed an appeal to the government, threatening to give up their positions. This had the desired effect and in 1908 there arose five new, up to date clinics, on the grounds of the former insane asylum, near the rear entrance of the old *Allgemeine Krankenhaus.*

While the building plan provided for eighteen clinics—it is

FIG. 2.—Allgemeine Krankenhaus.

more than doubtful, if the rest of the planned thirteen clinics will ever be built, considering the upset financial conditions and the reduced size of the present republic of Austria.

The two clinics for women (Schauta and Chrobak), including the isolation pavilion in which both share, cover thirteen per cent. of the area of fifty-one thousand meters allotted to them, to wit 3,235 square meters for each clinic and five hundred and twenty square meters for the isolation pavilion, while eighty-seven per cent. of the area—to wit forty-four thousand square metres—is given to garden plotting. Each of these clinics comprises a main structure with three wings, four floors. They are up to date in every particular: the transition from floors to the walls and the walls to the ceilings is rounded, all walls show oil and enamel finish. There are no thresholds at the doors to avoid shaking the patients while being transported in their roller beds. There are separate rooms for sterilization, narcosis, wakening from narcosis, labor wards, tea kitchens, laboratories, hot and cold water in every room, baby tubs for the newborn, plenty of telegraphs and telephones, uniform electric clock devices in all rooms, electric light system; a most modern ventilation plant pumps fresh air from the garden into every room; steam heat. Special space is given for photographic and Röntgen work; an institute for experimental pathology with special operating rooms. The wards have twenty-three to twenty-four beds; there are also smaller rooms having one to three beds for restless, infectious or malodorous cases. The rooms destined for dispensary patients, admission, lectures, students' dormitories are located near the main entrances—thus separating the sick from all possible noises. The pregnant women occupy the basement, to save them stair climbing and facilitating the shortest possible exit into the gardens. Each clinic has 232 beds for obstetrical, fifty-eight beds for gynecological cases and twelve to eighteen beds in the isolation pavilion. There are also socalled exchange rooms, meaning rooms, which after having been disinfected, remain empty for a few days and are aired in that time. As stated, only five clinics obtained such splendid new quarters: two obstetrical-gynecological (Peham and Kermauner), one for children, (Pirquet), one for internal medicine (Wenckebach), one laryngology and otiatry (Hajek and Neumann)—the other clinics were doomed to remain within the walls of the old *Allgemeine Krankenhaus* and are striving hard to make the best of their crowded condition.

The *Allgemeine Krankenhaus,* with its damp old walls constitute one of the most hideous looking landmarks in beautiful Vienna; it resembles an old stable of a mediaeval country seat rather than an hospital for the sick.

Professor Hochenegg has endeavored for years to convince the authorities of the impossible conditions prevailing in the surgical clinics of the old *Allgemeine Krankenhaus*: to illustrate this claim we may mention, that the number of students matriculated at his clinic was seven hundred, while the seating capacity of his lecture room was only two hundred and fifty.

His latest plan, for the support of which he tries to enlist the influence of the Vienna Medical Society, is to move the patients not used for clinical purposes into the neighboring garrison hospital and hospital for army officers—evacuated since the dismemberment of the old monarchy and the dissolution of the large standing army. As the government,

in pursuance of its saving policy, has already reduced three medical department of the *Allgemeine krankenhaus,* the latter would become spacious enough to allow of temporary improvements; it could be transformed from a formerly mixed hospital into an institution for clinical teaching only.

As everybody realizes that the rapid fall of Vienna's once great medical reputation is due to a large extent to the lack of equipment and facilities for modern research work, Hochenegg's efforts in behalf of the clinics seem to meet a better fate than his calls for other reforms among the medical profession.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

LONDON, *June 22, 1924.*

EMPIRE FIGHT AGAINST CANCER

The second quarterly meeting of the Grand Council of the British Empire Cancer Campaign was held on April 15th. Material advances were announced in the activities of the work of the campaign. The Scientific Advisory Committee, which was set up by the Royal Society and the Medical Research Council in consultation with the British Empire Cancer Campaign a few weeks ago, has already held two meetings, and it has decided to meet every month until further notice. The members of the committee have long been in communication with scientists in all parts of the world where cancer research is being carried out, and thus the committee will be in a position to obtain data to assist those carrying out cancer research, to prevent overlapping of effort and to keep the public generally informed of the activities in cancer research in other countries. A letter was read from the Ministry of Health asking that steps might be taken to help close and continuous cooperation between the Ministry of Health Committee dealing with cancer, and the British Empire Cancer Campaign, and on the suggestion of the Ministry of Health, Professor Gowland Hopkins, Cambridge University, and Professor Lazarus Barlow, professor of experimental pathology, Middlesex Hospital, were appointed liaison officers between the two bodies.

CAMPAIGN FOR THE INFANTS' HOSPITAL

Of all the campaigns being waged in this country for the voluntary hospitals, and some of them are of the most vigorous nature, none is more vigorous than that for the Infants' Hospital, Vincent Square, London. The increased willingness to give to the hospitals is due, perhaps, to the desire of the public generally to retain them as voluntary institutions and not allow them to come under the bureaucratic régime of nationalization. There is a party in this country which believes or at any rate preaches the doctrine that nationalization is a panacea for all evils. They are blind to the history of nationalization in other countries and fail to understand that competition is the breath of progress. However, the people of this country are on the whole warmly attached to their voluntary hospitals and are opening their pocketbooks in a remarkable way to keep them well above water. The campaign for the Infants' Hospital is extremely strenuous. It has been taken in hand by the brothers Berry, among the largest newspaper proprietors of the country.

BACILLUS OF FOOT AND MOUTH DISEASE

Dr. Frosch, professor at the College for Veterinary Surgeons at the University of Berlin, informed the world recently that he and his assistant, Professor Dahmen, have discovered the bacillus which is the cause of foot and mouth disease. A full account for scientific readers in the *Berlin University Veterinary Journal* will have appeared by the time this letter is published. It may also be said that the experiments have not been tried out at Koch's Institution and the Board of Health of Berlin. The bacillus, or virus, is extremely minute filterable, of the kind that Flexner isolated in poliomyelitis. It is so small, indeed, that it cannot be seen by means of the most powerful microscope and the German investigators made use of photography for the purpose. They employed a photographic apparatus which magnifies on the sensitive plate the microscopic view of the bacteria to more than double the size seen through the microscopic lens. They are also stated to have worked at night in complete darkness with perfect quiet in the building to prevent the slightest motion of the camera. It is also stated that a culture has been prepared, so that not only have the bacilli been found but an easy method of propagating them. It seems, if this reported discovery is confirmed, that developments in the study of foot and mouth disease will proceed with great rapidity.

INSANITY AND CRIME

The text has just been issued of Lord Darling's bill to amend the law relating to the criminal responsibility of accused persons suffering from mental disease. The first clause provides that, 1. A person is not responsible to the law for an act or omission charged against him as a crime, if at the time of doing the act or of making the omission he is proved to be suffering from such a state of mental disease as deprives him: a, of capacity at the time to know, understand, and appreciate the physical nature and quality of the act done or omission made or b, of capacity to know, understand, and appreciate at the time that the act done or omission made was wrong; or c, if at the time the act was done or omission made he was suffering from such a state of mental disease as therefrom to be wholly incapable of resisting an impulse to do the act or make the omission. 2. A person who is suffering from mental disease at the time of doing the act or of making the omission charged against him as a crime and by reason of such mental disease is affected by delusions on some specific matter or matters, but whose mental condition does not render him irresponsible to the law within the meaning of sub-section 1 of this section is criminally responsible for such act done or omission made to the same extent and as if the facts with respect to which such delusions exist were real. The definition of insanity or of mental disorder is most difficult. Legal and medical authorities here are at variance as to this point and the general public is altogether a tsea.

NEW BOOKS

Three good books have been issued recently by William Heinemann (Medical Books), Ltd., London. *Insulin in General Practice,* by A. Clarke Begg, O.B.E., M.D., is a practical clinical guide to the use of insulin in the treatment of diabetes in general practice. This small inexpensive book gives all the salient facts on the subject couched in clear language and should be valuable as a reference book to general practitioners and students.

Organic Substances, Sera and Vaccines, by O. W. Barmalt Jones, M.D., F.R.C.P., is a description by the author of treatment in this sphere of therapeutics drawn almost wholly from personal experience. While there are some gaps, nearly everything is touched for by Dr. Jones.

A third book is a translation from the French by Dr. R. Scott Stevenson of *Ear, Nose and Throat Treatment in General Practice,* by that master of his subject, Dr. Georges Portmann.

Dr. W. Seaman Bainbridge's *Problem of Cancer* has been issued recently from the Barcelona Press, translated into Spanish by Dr. Rera, professor of clinical surgery at the Faculty of Medicine, Barcelona, with an appendix on the treatment of malignant neoplasms by radiation by Dr. Vicente, professor of radiotherapy at the Faculty of Medicine, Barcelona. It may be remembered that the second edition of Dr. Bainbridge's work on cancer was translated into French at the request of the King and Queen of the Belgians and was the first book printed and published at the Royal Press of Louvain University after the destruction of the buildings by the Germans.

INTERNATIONAL CLINIC OF PLASTIC SURGERY IN LONDON

During the war and after in England as in other countries, notably in France and in America, wonderful work was done in facial restoration. A large hospital for this branch of surgery at Sidcup, near London, was opened and in 1919 the writer had the privilege of witnessing there some of the results of plastic surgery and an operation for the restoration or betterment of certain facial deformities received in war performed by Major H. D. Gillies, C.B.G., the head of the Sidcup institution. It may be added that Major Gillies is well known in some of the large cities of America, as in 1920 he paid a visit to New York and a few other big centres, lecturing on his experience in the art of facial restoration. Moreover, Major Gillies published a year or so ago the best and fullest book on the subject. Recently, an international clinic for the practice of plastic surgery has been established in London. It is housed temporarily in St. Andrew's Hospital, Dollis Hill, a suburb of London, until funds are available to add a special wing to that institution for plastic surgery. Major Gillies is head of this department and his associate is Mr. T. Pomfret Kilner. There are also two American members of the staff, and one, Professor Lemaitre, representing France. The general purpose of the clinic is to preserve, improve and teach the knowledge of facial restoration and improvement, which was developed so greatly during the war. Surgeons of unquestionable standing only will be received as students, and dentists, artists, and sculptors will cooperate to make of plastic surgery a separate branch of surgical work. Lectures will be given and conferences held in different countries.

THE INFANTS' HOSPITAL, LONDON

The Infants' Hospital, Vincent's Square, is almost unique in its way. It is the largest infants' hospital in Great Britain, having fifty beds, several private wards, and the hospital buildings and equipment provided in 1907 and 1914 are well built, carefully chosen, and excellently adapted for their purpose. Also being situated in a poor neighborhood, its wards are always full and the outpatient department is large. The committee holding that the hospital's important work should be carried on in the most thorough manner possible, have added x ray and artificial sunlight installations, have improved the balconies for open air treatment and have the buildings and equipment put into a state of complete efficiency. This hospital is under new direction and may be strongly recommended to any American medical men coming to London for postgraduate work. The director, Dr. Eric Pritchard, has succeeded in getting the hospital into admirable working order. Lectures are given by him and the staff, round table conferences held, and as said before the clinical material is practically unlimited.

VIENNA LETTER

(From our own correspondent)

VIENNA, *June 1, 1924*

ARTIFICIAL MISCARRIAGE

The Society of Social Democratic Physicians has instituted a discussion regarding the Austrian penal law, which categorically prohibits the performing of artificial abortion. The discussion lasted two days. The socialist representatives of the medical profession wanted to tender a bill which permitted the artificial abortion during the first three months of gestation. The presidential chair was occupied by Professor Friedjung, who suggested that the question of artificial abortion be dealt with without prejudice, because the old law was not modern.

ANTITUBERCULOSIS SERUM

The Vienna medical clinics are making experiments with a new antituberculosis drug called aurocitin. This is the invention of Professor Holger Möllgaard, of the Agricultural High School of Copenhagen, Denmark. The drug is a chemotherapeutic preparation, and it was experimented with in the latter years extensively in the different states of Central Europe. Aurocitin is a gold salt which if injected into a tuberculous patient, produces toxines, which are likely to kill the tuberculous bacilli. Until now all experimenters have favorable experiences with this drug, which is manufactured now under the personal supervision of the inventor, Dr. Möllgaard. The Vienna experimenters have not published any reports on the results attained, but so much leaked out already from the clinics, that the drug is worth the trial although it is still far from being called a remedy against tuberculosis. It controls the fever, stops coughing and increases the appetite. Professor Möllgaard was formerly assistant in the physiological laboratory of Copenhagen.

THE ZUCKERKANDL MEMORIAL

Under the arcades of the Vienna University the memorial of the late famous anatomist of the Vienna University, Emil Zuckerkandl, was solemnly unveiled recently. The memorial is a lifesize statue made by a famous sculptor, Anton Hanaks. The bronze statue stands on a marble pedestal, and illustrates the great anatomist in a working coat, depicting him when pointing with his right, bent arm, to the play of the muscles of the left hand. This motive of teaching anatomy strongly reminds one of the famous painting of Rembrandt, *The Anatomist.* The memorial is placed in the library corner of the arcade, in the neighborhood of William Hartel, late Minister of Public Education of Austria, and Professor Bamberger. The unveiling ceremony was attended by a huge crowd. It was touching, when a laurel wreath has been laid on the statue by the members of the *Danubia* society, wherein the late Zuckerkandl played a great rôle.

ALLEGED DISSECTION OF A LIVING MAN

The great council of the canton Geneva, Switzerland, has dealt repeatedly with the case of Professor Kummer, director of the surgical clinic at the university and the canton hospital. He was indicted by some employees of the clinic, and discharged from service, for having dissected a living man. The government council and the great council acquitted him after an investigation.

DEATH OF PROFESSOR PICK

Some days ago Professor Pick, teacher of psychiatry at the German University in Prague, died in the seventy-fifth year of life. Dr. Arnold Pick was a pathmaker in the domain of neurology. He resigned his post only two years ago. The death of Professor Pick, whose fame has spread well beyond the boundary of his fatherland, reminds one of the glorious period of the Prague school. There was no branch of psychiatry, where Pick did not work. His lectures were famous for their clarity. He was known as a man without a single enemy. His successor is Dr. Otto Plötzl, son of a well known Vienna writer.

PARIS LETTER

(From our own correspondent)

Paris, *July 4, 1924*

ALL SPECIALISTS NOW

In the days of long ago, that is to say in the last century, when it was still licit in the United States to go to port or sherry for a simile, Sir William Harcourt, the British politician, was likened in his last days to old crusted wine. And it was he, when dread of radicalism was expressed in his presence, who laughingly replied: "Socialists! Why bless you, we are all Socialists now!" It is no longer permissible, the Scriptures notwithstanding, to go to the vineyard for metaphors, but Sir William may still be paraphrased medically speaking, and the variant of his phrase fitting the present day is: "We are all specialists now." Take Professor Pinard, for instance. Professor Pinard is a delightful old man of more than eighty years, an authority on obstetrics and a member of the Chamber of Deputies in the bargain. His mission in life is to usher babes into this world, and so well has he accomplished this mission that he lays claim to having officiated at some twenty thousand accouchements. A simple arithmetical operation will show this to mean nearly ten a day since the age of twenty years, allowing for holidays, which is no mean record. But then Professor Pinard is of the old French school, noted for hard work!

Dr. Pinard is the selfconstituted apostle of puericulture in this country; it is alleged against him, indeed, that, like Mr. Dick, he cannot keep puericulture out of the memorial. No wonder then that the other day when, as the oldest member of the Chamber of Deputies, he was presiding officer at the opening sitting of the new Legislature, his inaugural speech was devoted in great part to childrearing, a very timely topic, as the declining birthrate is one of the most important of immediate problems in France. Some Deputies thought that the old professor was rather longwinded and went out into the lobbies to smoke. But what can you expect of a specialist if not to talk shop?

SPECIALIZATION GONE MAD

When a specialist thus talks shop and stops at that there is little harm done. The trouble is when he carries precept into practice. But after all everything is relative. L. Boudreau, of Bordeaux, has specialized in treating tuberculosis with tincture of iodine administered through the digestive channels. Like all apostles, he has faith abounding in this treatment. So do his patients, judging by the quantity of tincture of iodine which they ingurgitate. At all events, if the treatment does not cure tuberculosis, trustworthy witnesses assert that it does no harm, which deposition is gratifying when you consider that Dr. Boudreau, or more accurately his patients, have reached the astounding dose of three thousand drops of tincture of iodine a day. Needless to say, this quantity was reached progressively. The doctor and his trusting patients started with twenty to thirty drops a day some ten months ago. Rapidly the quantity rose to forty, to fifty, to sixty drops. The patients seemed to be making progress. The doctor's fellow practitioners shrugged their shoulders and declared that he must be mad. Perhaps he is, but that there is method in his madness is shown by the fact that from sixty drops the dose rose to one hundred and fifty, to two hundred, to three hundred; then by jumps to one thousand, fifteen hundred, two thousand, three thousand. Dr. Boudreau, of Bordeaux, has stopped at this quantity at present—a claret glass of tincture of iodine. The patients are none the worse apparently, perhaps they have improved, and the medical world is awaiting further reports of this highly specialized treatment.

ABLATION OF THE SPLEEN

Several French specialists are out after the spleen. Recently it was Professor Charles Richer, who declared that it is of mediocre use; now comes Professor Chauffard who will have none of it and who holds that it can be removed without inconvenience. Indeed, he is of opinion that in certain cases such removal is an advantage, for instance, in connection with icteroid maladies of congenital origin. In the *Journal de Médecine et de Chirurgie Pratique,* Pro-

fessor Chauffard reports the case of an icteric subject who had suffered for forty years and whose symptoms disappeared completely after the removal of his spleen. The theory is that the spleen is useless and that its normal functions may be well carried on by the liver. Consequently Professor Chauffard and other surgeons have this specialty—if your spleen bothers you, let us remove it for you.

THE BREASTS ALSO

Dr. Duclaux goes one better. His slogan is: if a woman complains that her breasts were painful, off they go. In a long communication to the Société de Médecine de Paris, he gives details of two cases of hypertrophy of the mammæ. In both instances the subjects were young women, of slight build and much devoted to sports. They complained of considerable hypertrophy, irksome and painful. The only rational treatment, in his opinion, was total amputation, with lateral incision.

WHAT'S IN A NAME?

In the opinion of Dr. Lévy-Darras, of Evian-les-Bains, the wellknown watering place in Savoy much frequented by Americans, specializing is a good deal in question of names. He implies that fashionable practitioners are tempted to find fashionable names for maladies which in themselves are far from new. For instance, nobody at the present time ever seems to speak of arteriosclerosis, whereas some time before the war no one spoke of anything else, so much so that engineers would say that the railroad systems of the country were suffering from arteriosclerosis! Dr. Lévy-Darras holds that the disease is as prevalent as before but that physicians have seen fit to change the name. Since the introduction into general practice of such sphygmometers as those of Pachon, Vaquez-Laubry and Lian, all the talk has been of arterial hypertension; the patient who has come fearing arteriosclerosis, hears that he is merely "hypertended" and goes away satisfied with the diagnosis. Speaking more seriously, hypertension is now looked upon as a sort of spontaneous equilibrium in the fight against kidneys stricken with sclerosis. It is generally accepted, moreover, that hypertension of the arteries is far from being always consecutive upon a lesion of the kidneys; that hypertension frequently precedes the renal lesion; and that there may even be hypertension without renal lesion. Brightism, consequently, has seen its importance increase in the matter of a symptomatology. Furthermore, it has become manifest that many minor symptoms of Brightism—this is the current phrase here since Dieulafoy studied the malady so successfully—are not peculiar thereto. In a word, too much importance has been conceded to chronic nephritis, and leading practitioners are of opinion that physicians should differentiate between the said chronic nephritis and a more general malady of which the renal lesion is only one complication. In fine, arteriosclerosis is reappearing in French medical terminology. What is it to be called now? Some propose Brightism. This is opposed on the ground that, because Dieulafoy saw fit to modify the definition handed down by Bright, there is no reason for modifying Dieulafoy's definition in its turn and making it mean more than renal sclerosis. Hence the search for a new name.

LATIN AMERICA LETTER

(From our own correspondent)

BALBOA HEIGHTS, C. Z., *July 21, 1924*

PUBLIC HEALTH LABORATORY IN COSTA RICA

Dr. Luis Schapiro, Senior State Director of the International Health Board, has just returned to the Isthmus and the Republic of Panama from an extended trip through Costa Rica. The purposes of the trip were twofold: A general inspection relative to the hookworm control campaign which is being intensively waged in that country; and supervision of the establishment of a public health laboratory at San José. This laboratory is being established through funds donated by the International Health Board in cooperation with the Government of Costa Rica. It will be under the control of the Department of Health of Costa Rica and will be directed by the Sub-Secretary of State. Costa Rica now has a well-rounded Health Department which is considered one of the best among the Central American countries. According to Dr. Schapiro, hookworm disease is rapidly on the decrease owing to the campaign which is being waged against it.

TYPHOID FEVER AT CARTAGO, COSTA RICA

There has been reported by cable to the Chief Health Officer of the Panama Canal an outbreak of typhoid fever in the city of Cartago, Costa Rica. A summer camp for the Boy Scouts of the Canal Zone had been established about three miles below this city and it was the intention of the scouts to make camp there during the months of August. On account of this epidemic this outing will not take place in Costa Rica. It is probable that the scouts will camp in the mountains of Panama in the Chiriqui Country.

THE CARIBBEAN YELLOW FEVER SURVEY

Dr. N. E. Connor, former Health Officer of the City of Panama, at present one of the directors of the International Health Board, was a recent visitor to the Health Department of the Panama Canal. Dr. Connor is en route to New York after having spent the past five months in a yellow fever survey of south Caribbean ports. He has visited and made intensive studies particularly in Trinidad, British, Dutch and French Guiana and Venezuela. He reports that the foci of infection of yellow fever have practically been destroyed in these places. There is a possibility, however, that there may be a focus of infection in Maracaibo. Dr. Connor says that Trinidad is in particularly good sanitary condition, a complete water and sewage system having been installed in the city. In the Guianas many suspicious cases of yellow fever have been reported but according to Dr. Connor these are, in his opinion, cases of a disease due to a spirochete producing a disease which simulates yellow fever. This undoubtedly has been introduced in these countries through the natives of Java, where the disease exists in endemic form.

MAJOR CONGER ARRIVES ON THE ISTHMUS

Major W. C. Conger, Medical Corps, United States Army, recently assigned to the Health Department of the Canal Zone, arrived on the transport *Chateau Thierry* July 20th. During the absence on leave of Dr. Henry Goldthwaite, Major Conger will act as Health Officer of Panama City.

Book Reviews

ANGINA PECTORIS

Die Angina Pectoris. Von Dr. med. Oskar Burwinkel. Halle a. S.: Carl Marhold, 1924. Pp. 30.

This is a short didactic presentation within the compass of thirty pages of the etiology, symptomatology and treatment of angina pectoris. As such it is quite satisfactory. The author adheres to the view that every case of angina pectoris is determined by some form of coronary artery disease with resulting myocardial ischemia. This theory does not explain every case. In the experience of the author syphilitic aortitis has become much more frequent since the introduction of salvarsan as a remedy for syphilis. This is an interesting point and deserves further study. Almost half of the pamphlet is devoted to therapy. There is no discussion of the surgical treatment of angina pectoris.

ELECTROCARDIOGRAPHY

Clinical Electrocardiography. By Sir Thomas Lewis, M.D., F.R.S., D.Sc., F.R.C.P., C.B.E. Third Edition. London: Shaw and Sons, Ltd., 1924. Pp. 126.

Sir Thomas Lewis's small monograph on *Clinical Electrocardiography* is so well known that it requires little additional comment. The chief change in this, the third edition, is a revision of the sections on auricular flutter and fibrillation to make them conform to the circus movement theory. Lewis now accepts the inversion of the T wave in Lead II as being, with few exceptions, a sign of grave prognostic import. Aside from the items just mentioned, there have been no changes of content, but considerable painstaking revision of phraseology has been made. It is most refreshing to read a book that is written with such care and precision. There are few authors who have so clear and succinct a style as that of Lewis, and still fewer who pay so much attention to accuracy in the use of words and the construction of sentences. The book should serve as a model of scientific exposition.

ELECTROCARDIOGRAM

Clinical Aspects of the Electrocardiogram. A Manual for Physicians and Students. By Harold E. B. Pardee, M.D. With fifty-six illustrations. New York: Paul F. Hoeber, Inc., 1924. Pp. 222.

Dr. Pardee has written a manual on the clinical aspects of electrocardiography which is accurate, concise, and well balanced. Controversial points are omitted, or barely touched upon, for the book is planned frankly as an elementary guide to students and practitioners. The author recognizes that the electrocardiogram is but one of many methods of examining the heart, and that it must be correlated with the complete history and physical examination of the patient. Following the first chapter in which the electrocardiogram is described and its physiological basis is discussed, the normal electrocardiogram is presented in some detail with due consideration of its normal variations. Subsequent chapters are devoted to an exposition of electrocardiographic changes due to hypertrophy of the auricles and ventricles, to myocardial abnormality, the clinical significance of abnormal waves, disturbances of rate or rhythm with a discussion of its clinical aspects. The final chapters are devoted to the theory of the electrocardiogram and to a description of the electrocardiograph and its operation. A well chosen bibliography concludes the volume. The book is well printed, bound and illustrated. The misspelling of the word "venous" on page 46, as well as a few other minor typographical errors, might have been avoided by more careful proof-reading. This manual should find a wide sphere of usefulness among students and practitioners as a text book of the elements of electrocardiography.

ARTERIAL HYPERTENSION

L'Hypertension Artérielle. Par Dr. Camille Lian et Dr. André Finot. Bibliotheque des Connaissances Médicales, Direger par le Docteur Appert. Paris: Ernst Flammarion, 1924. Pp. 247.

This book is one of a series of manuals on medical topics designed for the educated lay public, as well as for students and general practitioners. Its form, therefore, must of necessity be didactic. The presentation is clear and simple; not a mere compilation, but a critical summary based on the experience of authors. In the initial chapters there is a good sketch of the history of our knowledge of the circulation, as well as a lucid elementary delineation of the fundamentals of cardiovascular physiology. The technic and application of sphygmomanometry is discussed and the clinical phases of the hypertensive states are well presented. The authors have been successful in producing an interesting elementary and didactic manual on hypertension.

DISEASES OF THE CHEST

Diseases of the Chest and the Principles of Physical Diagnosis. By George W. Norris, M. D., and Henry R. M. Landis, M.D. With a chapter on the Electrocardiograph in Heart Disease, by Edward Krumbhaar, Ph.D., M.D. Third Edition, Revised. With 433 illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 907.

The previous editions of Norris and Landis's textbook on *Diseases of the Chest* have established for it an assured place in its field. The new (third) edition, which has been carefully revised and much enlarged, should enlarge its circle of readers and its scope of usefulness. Many sections have been rewritten and new material on a wide variety of topics, such as shallow breathing, cyanosis, heart pain, arteriosclerosis of the pulmonary artery, rupture of the heart, tuberculosis of the heart, tumors of the heart, mycotic aneurysms, abortive and masked tuberculosis, and modes of death in pulmonary tuberculosis have been added.

It is unfortunate that the authors did not see fit to revise the section on myocarditis. They criticize the use of the term and then proceed to include under the category of chronic myocarditis a variety of conditions such as fibroid degeneration, fatty heart and brown atrophy. Not a few will dispute the statement that "the final stage in chronic valvular disease is, in the great majority of instances, muscular in-

sufficiency due to myocardial degeneration." As a matter of fact, the lack of correspondence between anatomical lesions of the myocardium, and the degree of muscular sufficiency has been established by a number of careful studies, such as those of Krehl and Aschoff.

In the section on intrathoracic tumors more emphasis might have been placed on their early recognition; on the importance of dullness and diminished breathing in older patients with cough. The use of the bronchoscope in their early diagnosis as well as the examination of pleural effusions for tumor cells should be discussed.

The book contains a wealth of information, well presented and richly illustrated. It is a work of value not alone to the medical student, but to every physician who is interested in diseases of the chest.

BIOLOGICAL THERAPY

A Practical Textbook of Infection, Immunity and Biological Therapy. By JOHN A. KOLMER, M.D. Third edition, 1923. Philadelphia and London: W. B. Saunders Company. Pp. 1210.

This book, which is already well known through its first and second editions to the medical profession, is invaluable to the practising physician because of the space devoted to therapy. It is of equal usefulness to the teacher for the concise expression of theory, careful attention to detail of technic, and the discussion of the relative value of various diagnostic procedures.

Of especial value to the practising physician is the chapter dealing with vaccines, sera, blood and nonspecific protein in the treatment of disease, and the not least important item is the accentuation of the difference between vaccines and serums, which is a point of significance to patients. The volume is comprehensive enough in scope for the scholar, clear enough in its diction and explanatory matter for the student, and about as useful to the medical profession as the Bible is to a Minister of the Gospel.

ANESTHESIA

Anesthesia. By James Tayloe Gwathmey, M.D. With Collaboration on Special Subjects. Illustrated. Second Revised Edition. New York: The Macmillan Company, 1924. Pp. 799.

Dr. Gwathmey published in 1914 the first edition of his monumental work on *Anesthesia,* which has remained the authority on the subject to the present time. The second edition retains much of the groundwork which distinguished the first edition and contains many additions which bring the work abreast with the knowledge of anesthesia gained during the world war and in the civil practice of the past ten years. The chapter on Colonic Anesthesia has been rewritten. That on Local Anesthesia by the eminent authority, Dr. James F. Mitchell, has been extended in accordance with the recent advances in this branch and its value increased by a large number of new illustrations. A new chapter on Synergistic Anesthesia with magnesium sulphate recounts the early work of Meltzer on this subject, a theoretical and physiological consideration of synergistic anesthesia and a practical account of the methods through which the author has achieved such remarkable results with this form of anesthesia. The chapter on Anesthesia During the World War will be read with the greatest interest. It results from Gwathmey's great opportunities and experience during the war and is written in his best style. Ethylene anesthesia is considered by Dr. Arno B. Lockhardt as a result of whose labors this anesthetic has risen from entire obscurity to a world wide interest in a period of a little over a year. The practical anesthetist will study with great advantage Dr. Arthur E. Guedel's chapter on Third Stage Anesthesia. It describes and elucidates Guedel's important discovery that "the eyeball with its varying positions and movements affords an anesthetic sign which, in proper classification and when considered in its association with other signs, is a reliable guide to the stage of anesthesia present." Following this reliable guide, it is possible to secure satisfactory anesthesia without entering the deeper stages which are danger zones for the patient. With the aid of these collaborators Dr. Gwathmey, in the second edition of *Anesthesia,* has produced a work indispensable alike to the student and to the specialist in anesthesia.

THE MALE GONADS

The Human Testis. Its Gross Anatomy, Histology, Physiology, Pathology, with Particular Reference to its Endocrinology. By Max Thorek, M.D. With 308 Illustrations. Philadelphia and London: J. B. Lippincott Company, 1924. Pp. 548.

This is one of the most complete books as well as the most satisfactory one that has appeared on the male gonads. The subject is attacked from many angles. Pathological states, alteration of function, and anomalies are each handled in a complete way. The various endocrine disorders are considered where the gonads are involved directly or indirectly. In the latter instance a broad point of view is taken, rather than the one where the gonads might be accused as the evil doers in every instance. Considerable attention is given to the work of Mott and Such, indeed almost the entire article which they published in the NEW YORK MEDICAL JOURNAL AND RECORD is quoted. As will be remembered by the readers of this JOURNAL, they discussed the relationship of dementia precox to the gonads. This book of Thorek's should have a wide appeal, being useful alike to the genitourinary specialist, endocrinologist, surgeon, clinician, and research worker. The illustrations are well chosen and excellently reproduced.

PHYSIOLOGY

Human Physiology. A Practical Course. By C. G. Douglas, C.M.G., M.C., D.M., F.R.S., and J. G. Priestley, M.C. D.M. Oxford: Clarendon Press, 1924. Pp. 232.

Here we find an outline of the practical course in human physiology given in the Final Honor School of Physiology in Oxford. In the main a study of the determination of function is stressed. This is done rather than any attempt being made to cover the entire field of physiology. The respiratory, vascular, renal, and alimentary systems are taken up in order and the various technical details given which are required to determine their respective states. For a textbook covering the field in this fashion, it is an admirable piece of work.

EVOLUTION

Evolution of Man. Essays. By G. Elliott Smith, M.A., M.D., Litt. D., D. Sc., F.R.C.P., F.R.S. New York: Oxford University Press, 1924. Pp. 159.

A series of light essays on man's evolution, easy to read and in the main valid. The only criticism that might be offered is that Smith falls into the common error that man studied himself with an equal degree to that of the study of his environment. He also considers man a beauty as compared to his progenitors. According to Smith man is a fine specimen, endowed with a thinking apparatus which he has used to a full measure. Many will agree with all this. However, we take issue with Smith and in all modesty postulate that so far as looks go, there is little to brag about. Man's ego has forced the concept and acceptance of all this. And so far as introspection goes, this has scarcely begun. Withal, Smith's book makes good reading.

MASTURBATION

Study of Masturbation and Its Reputed Sequelæ. By John F. W. Meagher, M.D., F.A.C.P. New York: William Wood and Company, 1924. Pp. 63.

This is a conservative treatise on masturbation, which covers the ground. In general Meagher takes a middle of the path attitude, varying between the extreme views held by Stekel, who finds in masturbation a harmless manifestation of physiosexual level, and more conservative workers, who see many evils in the train of this practice. Meagher has gone to many authorities and assembled their views clearly and compactly. The monograph gives a concise presentation of the subject and to many it will afford an entirely new point of view.

LAUGHTER AND COMEDY

Psychology of Laughter and Comedy. By J. Y. T. Greig, M.A. New York: Dodd, Mead and Company, 1923. Pp. 298.

An excellent piece of work, well built and studiously constructed. Full cognizance is given to the motives underlying this vital portion of our behavior. The attack is made from many well grounded angles. Surely we owe Greig a profound debt for this splendid book.

PHILIP GIBBS

The Middle of the Road. By Philip Gibbs. New York: George H. Doran Company, 1923.

Heirs Apparent. By Philip Gibbs. New York: George H. Doran Company, 1924.

Although Philip Gibbs' postwar novel, *The Middle of the Road,* has been frequently characterized by the literary critics as more of a study of social conditions in Europe after the war than a novel, the fact that it is also a most readable tale with interesting characters is testified to by a popularity that has earned for it the reputation of a "best seller on two continents." Perhaps the very fact that the characters in *The Middle of the Road* are rather more typical than individual has given it a broader appeal to the average reading public. At any rate, the tremendous social significance of the book, and its superb setting and background, justify it as one of the most important books of 1923. The descriptions and contrasts of postwar life and social conditions in England, France, Germany, and Russia, through which countries the "road" leads us, are drawn with the pen of the expert journalist and close observer of life.

Heirs Apparent is also more a social than a human document, but with the technic of characterization somewhat better developed. Yet the reader still feels that Gibbs is more of a reporter than a creator. He is the critical spectator rather than the interpreter of his personages, yet his criticism does not usually lack understanding. He is true to his philosophy of following the middle of the road.

Heirs Apparent is a study of postwar youth, born just too late for participation in the war, but deeply affected by its aftermath. These young people are self-conscious, critical of themselves, their elders and the world in which they live, yet their studied attitude is one of supreme indifference to life. Julian Perryman—"spelt with a y"—is expelled from Oxford because in a night of joy he has seen fit to celebrate by pulling down a crystal chandelier. Audrey Nye, a companion of the evening's jollification, is dismissed from Somerville for an unconventional return through the window at early dawn, so the two plan a motor trip to their respective homes. Julian's car breaks down, so the two young things decide to walk to London since they "dislike trains." The respective parents are horrified to learn that their children have spent a night at an inn together, and refuse at first to believe their story about separate rooms. This is one of the most significant truths the author has expressed in the book—that normal youth, however rash and indiscreet it may be, is usually decent.

And so the reader follows Julian and Audrey through a series of adventures and experiences, including Julian's "companionship" with the pretty young wife of a neighbor, and his experiences in journalistic work, to a time when circumstances make it necessary for these young people to take the reins of life in their own hands. Their lives have taught them to do this with at least no complainings, with courage, and a certain amount of self knowledge. "We thought ourselves so jolly superior to the rest of humanity," says Julian. "We were so stuck up with ourselves. We didn't expect the ordinary knocks that come to most people. We were the superior people, highly educated, very refined, utterly sure of ourselves, contemptuous of the old people, and their fears about us, and their cautions. We were the younger generation, out for a good time, with lots of rights and no duties, and all for the liberty and adventure. Sheltered from vulgarity and passion, and able to take risks which scared our preposterous parents! In fact we were utter frauds, and rather caddish. Pretty selfish. Conceited kids! Well, we've had our heads knocked together. We've been taken down a peg or two. That's all right. It'll do us a bit of good. Anyhow, I'm damned if I'm going to whine!"

The author, perhaps wisely, offers us no solution of the problem. He confines himself to the painting of a careful and usually sympathetic picture of life in modern England, one which at least stimulates very active thought upon this vital subject of the younger generation.

Medicoliterary Notes.

The Romance of a Living Temple is a title suggestive of the contents and treatment of the subject in hand of a recent book by Frederick M. Rossiter, B.S., M.D. The subtitle is *A Study of the Human Body,* and chapter by chapter the discussion follows the analogy of the body to a temple. Such a presentation of a scientific subject may appeal to a certain type of reader, but most lay readers even will feel that the book would gain in force if the subject were more simply and directly presented.

* * *

Dr. James J. Walsh, author of many books and articles on medical subjects written especially for the layman, is lecturing at Chautauqua this summer on various topics discussed in his writings.

* * *

At the University of Wisconsin a general plan has been originated for the establishment of a national institute for research in colloid chemistry with a permanent training school where scientific workers may attack the many still unsolved problems connected with the subject. The fields for experiment will include agriculture, engineering, geology, industry, medicine, biology and physics. The application of colloid chemistry to medicine is credited with saving more than 20,000 lives during the World War.

* * *

A recent book of interest to the criminologist and the psychologist is *Studies in Murder* by Edmund Lester Pearson, published by Macmillan. It contains accounts of a number of murders committed within the past century, and of the trials, when such were held, connected with the crimes.

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The knowledge and use of salt are as old as man. The use of salt for preserving foods was known to the early Egyptians and Assyrians, and the process is recorded both in the hieroglyphic and cuneiform writings.

* * *

Yellow fever has been effectively controlled by breeding fish that feed on the larvæ of the mosquitoes that disseminate the disease. This method has been utilized to good effect in Panama as supplementary to the draining of swamps and oiling of the surface of standing water.

* * *

Dr. Stanley M. Rinehart, Major U. S. Medical Corps and for many years a general practitioner in Pittsburgh, is the author of *The Common Sense of Health,* recently published by Doran. During the war Dr. Rinehart had charge of the tuberculosis work at Camp Sherman and was afterward consultant on tuberculosis in the Surgeon General's Office and in charge of all army tuberculosis hospitals. His wife is Mary Roberts Rinehart, the well known novelist.

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In cooperation with the Commonwealth Fund of New York City, the Berkshire Industrial Farm, a school for the "problem" boy, located at Canaan, N. Y., is about to begin a study of conduct disorders, Dr. Clinton P. McCord, consulting psychiatrist to the Farm, who is director of the mental hygiene work in the public schools of Albany, and instructor in educational hygiene in the Albany Medical College, will visit the Farm regularly to direct the psychiatric research. . . . The aim . . . is to make an intensive study of conduct disorders with the material under prolonged observation and control. It is hoped that the work will prove of value in dealing with "problem" boys in institutions.—*Mental Hygiene Bulletin.*

* * *

The numbers of the *Living Age* for July 12th and 19th are unusually interesting. An article on Our Minutest Foes Unmasked, by Franz Schikora, an associate of the bacteriologists who have succeeded in isolating and photographing the germ of the foot and mouth disease, is quoted from the Berlin *Vossische Zeitung.* Another article quoted from the same publication and written by Wolfgang van Weisl describes the *Sacrifice of the Passover on Mount Gerzim,* the meeting place of the last few remaining Samaritans, who claim to be the true Israelites, but not Jews. Karl Federn, writing in the same paper, gives some interesting impressions of *D'Annunzio, a Prince at Sixty.* In the issue of July 19th is quoted an article by Stéphane Lauzanne on *Will French Women Ever Vote?* The writer believes the answer to be distinctly *No.* William Little is the author of an article from the *English Review* tracing the history of the alcohol problem through the ages. A sketch of the home life of the Romanoffs, by a tutor in the family, is taken from the *Dni,* the Russian journal published in Berlin, and Douglas H. Stewart, writing for the London *Outlook,* cleverly describes a visit to a "literary factory."

* * *

The Illinois State Medical Society has in preparation for publication a History of *Medical Practice in the State of Illinois,* which will go back in scope over a period of 250 years. The society is making an appeal, in order that this volume may be accurate and complete, for personal data and experiences, including photographs, diaries, and similar documentary mementoes of pioneer Illinois doctors and of progressive phases of medical practice, as well as of achievements in fields other than those of medical science. Some of the subjects treated in the history will be physicians accompanying early explorers, government physicians and surgeons in attendance at the forts, theories of healing from the days of the aborigines through the mound builders, French and English explorers, anteboundary days, sporadic settlers, medical attendants for the covered wagon, herb doctors, primitive surgery, medicine and missionaries, migration of pioneer physicians to new territory, circuit riding and saddlebag doctors, pioneers as utility citizens, and Illinois medical men in industry, science, art, music and literature.

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Recent statistics show that Hungary has the lowest birth rate of all European countries.

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Dr. G. V. Anrep, assistant professor at University College, London, and formerly assistant to Prof. T. P. Pavlov of Petrograd, recently delivered a lecture of unusual interest at the New School for Social Research in which he described the experiments made by Prof. Pavlov in his laboratory in connection with the conditioned reflex.

* * *

Carolyn Conant Van Blarcom, representative of the American Child Health Association, addressed the Third English-Speaking Conference on Infant Welfare held in London in July. Miss Van Blarcom is the author of *Obstetrical Nursing* and *Getting Ready to Be a Mother* (Macmillan).

* * *

The Fundamentals of Vocational Psychology, by Prof. Charles H. Griffits of the University of Michigan, recently published by Macmillan, describes the various methods used in determining the qualifications of any individual for a particular vocation, explains and criticizes the psychological principles on which these methods are based, and points out the precautions necessary to secure valid results.

* * *

A recent German government report of an investigation of money as a source of infection states that disease germs are much more prevalent among postwar bank notes in Germany than they were in paper money in use before the war because of the fact that the currency is handled much more frequently than prior to 1914, probably because there is so much less of it. The investigation showed that coined money is virtually innocuous, owing to the selfdisinfecting action of the metal itself, and because the small, smooth surface of the coins prevents development of germs.

* * *

Probably few persons, even physicians, know that the first wood engraver in America was a doctor, Alexander Anderson, who was born in New York City in 1775. He made woodcuts for *The Looking Glass of the Mind* and other well known works, and some copper engravings after Holbein.

* * *

The mental hygiene survey of Staten Island, New York, has been completed and the report is being prepared. This study included 3,042 children in three public schools—a prevocational school, a continuation school, and a large public school; preschool children in three day nurseries and in St. Michael's Home; the inmates of the Richmond County Jail, and the children in the detention home for the Society for the Prevention of Cruelty to Children. It was conducted by the Division on Mental Deficiency of the National Committee for Mental Hygiene.—*Mental Hygiene Bulletin.*

Abstracts from Current Literature

HEART AND BLOODVESSELS

Cardiology.—J. S. Goodall and L. Rogers (*American Journal of Surgery,* May, 1924) contemplate the application of surgical methods for the relief of mitral stenosis, particularly when it has reached an incurable and continually advancing stage. The patient dies solely because of the obstruction of the mitral valve. They suggest the following operation, the whole object of which is to get oxygenated blood into the left ventricle. This is theoretically possible by establishing an extracardiac connecting channel, or by opening up the obstructed mitral valve. The latter procedure may be carried out by way of the ventricle, or by way of the auricle. Points in favor of the ventricular route are: It is more superficial; the absence of pleura over part of the pericardium; a thick muscular wall to operate upon; a small quantity of blood in the ventricle until the small valve is incised; less likelihood of introducing emboli into the circulation. On the other hand, there is difficulty in finding mitral opening, e. g., the lower end of a funnel; danger of wounding auricle; danger of paralyzing or causing fibrillation of ventricle; and subsequent degeneration of part of ventricular wall owing to sutures.

Although a somewhat more difficult procedure, the writers at present favor the auricular approach, the main advantage being the comparative ease with which the mitralotomy knife may be introduced through the stenosed valve, especially when of the funnel type. That portion of the pericardial sac which may conveniently be opened to expose the left auricle, lies between the vagus and phrenic nerves and below the superior intercostal vein. Indications for operation would be deficiency of the left ventricular output as evidenced by a falling and low blood pressure; smaller volume and force of pulse; absence or reduction of T waves in Lead II, of electrocardiogram; indications of the approach of right heart failure.

Diseases of Blood Vascular System of Extremities.—B. Brooks (*Journal of Bone and Joint Surgery,* April, 1924), through a series of experiments on dogs, shows that the decreased intravascular pressure of an extremity distal to the obstruction of an artery is increased by subsequent obstruction of the primary vein of the extremity. The increase of venous pressure over arterial pressure indicates a diminished volume flow of blood through the extremity. In applying these findings to contracture, that kind in which there is a fracture, usually of the distal end of the humerus, he explains the swollen condition following the application of a bandage as the result of a total obstruction of the venous system without obstruction of the arterial system. The obstruction of the outflow of blood raises the intravascular pressure in the capillaries until there is a complete disruption of these vessels, and the reaction of the tissues is that of acute inflammatory disease, followed by extensive fibrosis of the tissue. The fact that there is no obstruction to the arterial supply is proved by the fact that a severe inflammatory process exists. In like manner he explains certain clinical phenomena of other extremity diseases, i. e., contracture from arterial obstruction followed by anemia and a rapidly developing collateral circulation, gangrene from ligature of the large arteries, and spontaneous gangrene.

In discussing the variety of gangrene in which the arterial disease is confined to a relatively small area in a large artery or to only a branch of the primary artery, viz., thrombosis or embolism of the popliteal artery, he says: "In these conditions there is a definite possibility of relief by surgical treatment. There is an adequate arterial tubage in the affected extremity distal to the arterial obstruction. The volume flow of blood is not adequate, or the intravascular pressure is not sufficiently great for an efficient distribution of the blood. The problem to be solved in such a case is to get blood through or around the obstruction or make it possible to use the blood which is getting around the arterial obstruction more successfully. To accomplish the former the arterial block must be bridged by a vessel transplant or the collateral branches must be widened. In this connection, if the operation of perivascular sympathectomy is to accomplish anything, it is my belief that the sympathetic nerves must be operated on at such a site that the result is a dilatation of the branches of artery proximal to the obstruction which supplies the collateral circulation, rather than a dilatation of the arteries distal to the arterial block. If it could be established that the volume flow of blood through or around the block was adequate for life and the intravascular pressure was too low for proper distribution of the blood, then improvement would probably follow the production of an occlusion of veins sufficient to balance the circulation and maintain a higher intravascular pressure."

In conclusion Brooks points out the need for methods of examination, the present methods of determining blood pressure being inaccurate, and all methods of determining the pressure in the pulseless artery distal to an arterial obstruction being useless. At the present time experiments are in progress to determine the possibility of studying the size of the lumen of the arterial tree by intraarterial injection of sodium iodide and x ray studies. If this method is successful, as the experiments promise it to be, then it will be possible to determine the site and extent of arterial obstruction, and it may indicate the distribution of the blood flowing through the artery injected.

It would seem that heretofore attention has been too much centred on the vasomotor apparatus. It is possible that more could be learned if the viewpoint was shifted to that in which the bloodvessels were considered as tubes. At least it is certainly more within the grasp of the practical surgeon to consider the circulation of the blood in the extremity as fluid circulating through a system of tubes than to think more or less vaguely of the phenomena of the sympathetics. Every specimen amputated for gangrene and examined by the author has shown definite mechanical blocking of the lumen of the artery, and he has never seen a clinical condition of ischemia which he could be reasonably certain was due to arterial spasm.

The Heart in Hyperthyroidism.—William Dameshek (*Boston Medical and Surgical Journal,* March 20, 1924) studied 141 cases of hyperthyroidism, with special reference to cardiovascular symptoms. Forty of these patients were considered to have damaged hearts, divided into three classes:

1. The paroxysmal arrhythmia group,—twelve patients. In these, nine had auricular fibrillation; one, auricular flutter; one, auricular fibrillation and flutter; one, auricular tachycardia; average age, 39.5 years.

2. The block group, five patients: two, paroxysmal complete block; two, delayed conduction time; one, bundle branch block; average age, 36.4 years.

3. Heart failure group, twenty-three patients, with symptoms of heart failure only. Of these, ten had auricular fibrillation (permanent). Two types were distinguished: 1, the young, full blown cases with high metabolism; 2, the oldish, mild, atypical case, usually with adenoma, and with relatively low metabolism.

Concerning these he makes the following points:

1. Forty cases with cardiac damage in 141 of hyperthyroidism represent no mere coincidence. This observation immediately puts the cardiovascular symptoms (complications, if you will) of hyperthyriodism above all other symptoms in importance.

2. All cardiovascular symptoms may well be explained by assuming that hyperthyroidism represents a toxemia of some sort, with especial predilection for the myocardium.

3. The heart which is not clinically damaged is probably one undergoing irritation from the toxin. This causes the subjective symptoms of palpitation and precordial pain and the objective symptoms of rapid and forceful action.

The presence of forceful apex impulse, thrill, loud first sound, questionable presystolic murmur suggest mitral stenosis; the presence of peripheral pulsations and "pistol shots," of high systolic pressure, Corrigan and capillary pulse suggest aortic regurgitation.

4. Damaged hearts probably represent myocardial destruction of more or less degree. a. Cases with paroxysmal arrhythmias, and with paroxysmal heart block, occurring as they do usually in younger people, show a damaged heart muscle, with, however, enough good muscle for compensation. b. Cases with heart failure, coming in persons below forty, are usually end results of a full blown hyperthyroid

ism with very marked toxic action over a short period. c. Cases with heart failure in persons over forty (usually over fifty) are usually end results of a mild or atypical hyperthyroidism, usually with adenoma, the toxic action of which has acted in small doses over a period of twenty years or more.

5. Suspect hyperthyroidism in cases showing paroxysmal arrhythmia; in young people with severe precordial pain or with attacks of palpitation; in women over forty with heart failure and thyroid adenoma.

6. Medical treatment, except preliminary to operation, has no place in hyperthyroidism. Surgery (with x ray as a poor second), by removing the source of the toxemia, is the only means for combating the disease. More attention, especially surgical attention, should be focused on adenoma of the thyroid. In middleaged persons surely, in persons over twenty probably, it should be removed surgically.

The author emphasized the paramount importance of constant watch over the heart in hyperthyroidism.

The Heart in Hypertension.—James P. O'Hare and William G. Walker (*Boston Medical and Surgical Journal,* April 24, 1924), say that the prognosis of the heart in hypertension depends upon three elements:

1. The amount of strain. This may be the strain of living, or, more specifically, the strain against which the heart is beating. The latter is indicated by the height of the diastolic pressure. This measures the tonicity of the peripheral arteries and arterioles. Given a constantly high diastolic pressure, the prognosis is poor. Usually, however, these patients die of a cerebral accident before the heart wears out.

2. The condition of the coronary arteries. It is obvious that disease of these vessels may result in a poorer nutrition of the myocardium supplied and a consequent decreased efficiency of the heart. Furthermore, the likelihood of death from angina and coronary infarct must always be borne in mind. In Janeway's cases seven per cent. died in this way. In this connection, it is worth while to reiterate what Levine has pointed out—that those cases of angina with systolic pressures around 160 to 170 are the cases most to be feared.

3. The condition of the myocardium, which may be the result of factors 1 and 2. Here the evidence pointing to a grave outlook consists of a poor response to effort, a weak first heart sound, a persistently high cardiac rate, gallop rhythm, pulsus alternans, an inverted T wave in Lead I of the electrocardiogram when a digitalis effect can be excluded, a low vital capacity, defective conduction time, heart block and, perhaps, fibrillation.

Blood Pressure and Heart Action in Sleep and Dreams: Their Relation to Hemorrhages, Angina, and Sudden Death.—J. A. MacWilliam (*British Medical Journal,* December 22, 1923), maintains that in considering the subject of sleep one must deal with two distinct conditions, which have strikingly different associations, as far as nervous, circulatory, respiratory and other functions are concerned: 1, undisturbed or sound sleep, in which the blood pressure, cardiac and respiratory rates, etc., are lowered; 2, disturbed sleep, modified by reflex excitations, dreams, nightmare, etc., which are sometimes associated with marked rises of blood pressure, increased cardiac activity, changes in respiration and various reflex effects. The circulatory changes may be very pronounced. Night is not always the time of rest and sleep. This conception, while true as regards undisturbed sleep, has to be qualified by the consideration that night and sleep are occasionally the season of acute reflex and emotional disturbances, which, in the peculiar conditions present, induce very pronounced effects on the circulatory system, throwing a formidable strain upon its weak points, whether these be cardiac, with susceptibility to fibrillation or anginal pain, etc., or arterial, with risk of rupture. In this way the individual may, during the nocturnal period of assumed repose, be subjected to suddenly developed stresses, as estimated by the rise of blood pressure and the evidences of increased heart action, far beyond what is involved in ordinary muscular exercise gradually initiated. Thus hemorrhages, the onset of anginal attacks, and other disturbances in the night can be readily accounted for; also sudden death, probably due to ventricular fibrillation in most instances.

Factors, Actual and Possible, in Cardiac Nutrition.—Frederick H. Pratt (*Boston Medical and Surgical Journal,* February 21, 1924), says that modes of nutrition to the heart have four conceivable origins: 1, The coronary stream, yielding the vastly preponderating nutrient supply; 2, the pulmosystemic stream, passing laden with nutrition over endothelial and probably highly absorptive surfaces; 3, the sinusoidal stream, a diverted portion of the above, bathing the walls of the vestigial sinusoids (trabecular clefts and Thebesian openings) and known to be capable under experimental conditions of imparting a certain quota of nutriment to the myocardium; 4, the lymphatic stream, of problematical significance in the heart, yet undoubtedly an active distributor of material such as might be absorbed from the heart cavities.

Electrocardiographic Evidence of Myocardial Involvement in Rheumatic Fever.—Alfred E. Cohn and Homer F. Swift (*Journal of Experimental Medicine,* January, 1924) report observations showing in thirty-five of thirty-seven cases of rheumatic fever that the heart was affected in one way or another. They state that the evidence was of three sorts; first, the duration of auriculoventricular conduction was increased, though not always, and not usually to the degree of causing heart block; second, alteration in the ventricular complex of the electrocardiogram affecting in certain instances the QRS complex and in others either the interval between R wave and T wave, or the T wave itself; and third, the occurrence of numerous irregularities in cardiac rhythm. These signs express derangement of the heart, but are not specific for rheumatic fever. However, they are to be interpreted as evidence that the heart is affected by the rheumatic process even though an inference cannot be drawn as to the nature or the permanence of the injury. The facts brought forward show that it is possible during the course of the disease to know whether the heart is involved in the general process.

Hyperpiesis and Arteriosclerosis.—H. Batty Shaw (*British Medical Journal,* March 22, 1924), asserts that there is no justification for bunching together all the changes in the arteries under the title of arteriosclerosis or arteriocapillary fibrosis, which, strictly speaking, is not a clinical term, but a permissible pathological one to be used to describe particular conditions in which fibrosis affects the walls of an artery in toto, or only in part. Two forms of arterial disease may be recognized clinically; namely, 1, hyperpiesic and occupational tortuosity and hardening due to hypertrophy of the media, and 2, tortuosity and perhaps hardening independent of hyperpiesis and occupation, but due to infection which causes formative inflammation of the coats of the artery, as shown by cellular proliferation and by cellular exudation. The other forms of arterial changes which may defy clinical detection are arterial degeneration affecting the intima (atheroma) and degeneration affecting the media. There can be little doubt that such degenerations are toxic in character, maybe from lead, but in many other cases the toxic material is, judging by analogy, due to bacterial infection, which instead of being formative and protective is destructive and menacing.

Cardiovascular Conditions.—Mary L. H. Arnold Snow (*American Journal of Electrotherapeutics and Radiology,* May, 1924) presents an outline and the specific instances of results obtained in the treatment of cardiovascular conditions. She has shown marked effects by her method of management in the treatment of high blood pressure and the correction of a condition upon which she lays stress—a disparity often found in patients in whom there is a higher blood pressure lying than when sitting, indicating, in the author's opinion, a dilatation of the splanchnic area. By the case reports given, the author shows that by the use of mechanical vibration applied in the cardiovascular region from the seventh cervical to the sixth dorsal vertebra, marked effects are obtained by restoring the normal relation, correcting the blood pressure and the pulse pressure in given cases. The paper closes with conclusions as follows:

1. A more careful study of postural blood pressure and pulse pressure relationship would assist in determining prognosis and treatment, especially the study of pulse pressure which indicates cardiac and arterial conditions.

2. A comparative study of the velocity of the blood in connection with that of systolic, diastolic, and pulse pressures, as well as of pulse rate, will assist in standardizing treatment.

3. A reversed blood pressure postural relationship, associated with hypertension, is corrected or aided by a five minute vibratory treatment from the second to the sixth dorsal vertebra from above downward and alternately from side to side.

4. A reversed blood pressure postural relationship, if associated with low blood pressure, as a rule, when primary, is probably best treated by a two minute vibratory treatment between the seventh cervical and first dorsal vertebræ with the ball vibratode; exceptions are generally amenable to a vibratory treatment as indicated in the preceding paragraph.

5. Hypertension without systolic disparity when not occurring secondarily with valvular disease with nephritis is usually reduced by a five minute vibratory treatment between the second and third, and third and fourth dorsal vertebræ.

6. Hypotension when primary is treated with palliation, or symptomatic cure by inducing the cardiac reflex of contraction through toning up the heart by a two minute vibratory treatment with the ball vibratode between the seventh cervical and first dorsal vertebræ. Bishop notes that "in primary low arterial tension the heart muscle is in a position to recover its tone if depleted by acute disease, or to develop a compensatory hypertrophy if overtaxed by defective valves."

Prognosis in Cardiovascular Disease.—Thomas F. Cotton (*British Medical Journal,* February 23, 1924), states that the structural damage of the heart can be estimated from the physical signs with a fair measure of exactness. The physical examination rests upon those signs which indicate heart failure, the degree of cardiac enlargement, the valve defect, the rhythm, infection, etiology and the state of the arteries. It also includes an exercise tolerance test. There are two main types of heart failure: heart failure with congestion (engorgement of the venous system) and that with angina (without signs of venous congestion), always with disease of the myocardium and unfavorable outlook. A systolic murmur, wherever heard, is an unreliable sign of heart disease. The prognosis depends on the extent of the myocardial damage and the degree of renal impairment. In advanced myocardial disease the prognosis depends more upon the condition of the heart than on the condition of the kidneys, except in well advanced disease of the kidneys. If the myocardial disease is only slight the prognosis depends upon the functional capacity of the kidneys.

Rôle of the Osmotic Pressure of the Blood Proteins in the Pathogenesis of Edema and of High Blood Pressure.—P. Govaerts (*Bulletin de l'Académie royale de médecine de Belgique,* March 29, 1924), finds that by the use of cellophane as a membrane impermeable to proteins a simple osmometer can be made permitting of the clinical study of the osmotic pressure of the blood proteins. In normal subjects the pressure, as measured with his apparatus, is about thirty-five to forty centimetres of water. The pressure is proportionate to the protein content of the serum, one gram of proteins in 100 giving rise to a pressure of about 4.61 centimetres of water. In the serum of patients with edema, a reduced osmotic pressure of the proteins is found. Further, the pressure per gram of proteins in 100 is likewise reduced. These changes may exceptionally be wanting in edema due to mechanical hindrances to the venous circulation, but whenever the pressure was below thirty centimetres of water, edema was present. The intensity and tenacity of dropsy are proportionate to the reduction of pressure, which is most pronounced in the anasarca of nephritis. In cases of high blood pressure, on the other hand, the osmotic pressure of the proteins is high and the pressure per gram of proteins in 100 is increased. The osmotic pressure is susceptible to variation according to the total protein content of the blood plasma, the nature of the proteins present, water retention, salt retention, and changes in the distribution of hydrogen ions in the blood and tissues. The fundamental condition leading to the appearance of chronic edema is a pressure in the capillaries exceeding the osmotic pressure of the proteins in the blood plasma. It may thus be readily understood that certain stasis edemas are due solely to increase in venous pressure. In all the other cases studied, the osmotic pressure was diminished; this explains why edema may appear when the pressure in the capillaries is but slightly raised or even normal. Reduced osmotic pressure of the proteins may be considered to be the essential immediate cause of various chronic edemas, whether of cardiac, cachectic or nephritic origin. On the other hand, the results obtained would not justify a conclusion that increased osmotic pressure of blood proteins is a causal factor of high blood pressure. It is, however, permissible to think that such an increase confers upon cases of high blood pressure special resisting power to the production of stasis edema. One is often surprised to find complete absence of edema of the lower extremities in cases of high blood pressure, with or without nephritis, but with obvious cardiac insufficiency. In these subjects edema scarcely appears unless the blood becomes dilute by reason of progressive renal failure and reduced diuresis. Very probably this special resistance to the production of edema is due to two factors, viz., the low peripheral circulatory current, reducing venous pressure, and the high osmotic pressure of the blood proteins.

Cardiorrhaphy in Acute Injuries.—W. R. Smith (*Annals of Surgery,* December, 1923), offers the following summary to a report of two of his cases and a tabulated report of recorded cases. Cardiorrhaphy is a comparatively recent advance in surgery. The human heart is very tolerant of manipulation. This fact has been repeatedly demonstrated, especially in connection with foreign body extractions during and since the world war. Surgical pneumothorax is remarkably well tolerated. The symptomatology of heart injuries varies widely, and as a consequence the diagnosis of this condition is often very difficult. In cases of doubt, therefore, exploratory operations are justifiable. Transpleural thoracotomy under general anesthesia is probably the procedure best suited to the average case of this type. Drainage in these cases can be accomplished best through the medium of a simple valve tube drain through the chest wall.

Aneurysm of the Renal Artery.—M. J. Conroy (*Annals of Surgery,* November, 1923), gives an analysis of all cases in the literature with a report of a case and a dissertation on the etiology, pathology, symptoms, diagnosis, prognosis, and treatment of this condition, which latter follows. For those aneurysms which give rise to symptoms, there is but one efficient type for treatment. The best procedure is apparently removal of the sac together with the kidney. Morris advocates an oblique lumbar incision at the start, and an extraperitoneal approach is made until the nature of the tumor is discovered. This can be done by nicking the sac, and if laminated clot the sac should not be penetrated further for fear of starting a profuse hemorrhage. Once the growth is proved to be an aneurysm, if small the peritoneum is reflected medially and the sac with the kidney is removed extraperitoneally. If the sac is large, a transperitoneal approach should be made by continuing the incision anteriorly. The renal pedicle should be clamped before attempts are made to free the sac from surrounding structures. When this has been accomplished, the renal vessels and ureter are ligated, the pedicle severed distal to the ligatures and tumor and kidney removed in toto.

Preoperative Digitalization.—S. H. Geist and M. A. Goldberger (*Annals of Surgery,* December, 1923), report on a series of a hundred cases in which digitalis was used to combat fall in pressure of postoperative shock. They describe their method of administration as follows:

"At the time of the publication of the original paper we used two methods, the slow and the rapid method. We have found that the slow method had certain advantages, namely, ease of administration and absence of the digitalis nausea and vomiting, and for these reasons, of the hundred cases in the second series, all but eight were digitalized by the slow method. In the slow method digitan tablets, each one and one half grains, were used instead of the standardized tincture of digitalis. We give one tablet of digitan to each fifteen pounds of body weight as the total amount. The first dose is given twenty-four hours before operation and then every two hours until the entire amount is taken. On the morning of operation two more such doses at two hour intervals are given and occasionally twelve hours postoperative or twenty-four hours postoperative another dose can be administered. Digitan is standardized by its manufacturers, one and one half grains being equal to fifteen cc. of the standardized tincture. The digitalization effects last ten to fourteen days, so that if operation is deferred a few days, patients should not be redigitalized.

as in such instances one may get nausea and vomiting or other distressing symptom of poisoning.

"Comparing our results in this series with any random group of nondigitalized cases we feel that it confirms all the advantages previously claimed. It would seem, therefore, that it would be a decided advance to use this method as a routine for operative preparation just as much as the shave, tub, enema and morphine. The method is simple of execution, accurate in dose and nontoxic in its effect if the directions are followed."

Absorption of Adrenalin.—D. Murray Lyon (*Journal of Experimental Medicine,* December, 1923) investigated the response to hypodermic injection of adrenalin in fifty patients. The effects of the drug included a rise and subsequent fall in the volume of expired air, the oxygen consumption, the carbonic acid output, the metabolic rate, the respiratory quotient, and the systolic blood pressure. The movements of these readings coincide closely, and the record of the systolic pressure changes may be taken as expressing the general reaction. From this study Lyon draws the following conclusions: Adrenalin solution, given subcutaneously, is usually rapidly absorbed, probably by lymphatic channels. The speed of the process may be influenced by the circulation rate. The relative amounts of adrenalin at any moment unabsorbed at the site of inoculation, carried in the circulating fluids, and taken up by the reacting tissues can be calculated from figures extracted from the curve of the blood pressure changes. The relative rates of transference of adrenalin into the blood and from the circulation into the tissues can also be estimated. When absorption takes place rapidly a large quantity of the drug comes into action at once and the maximum occurs early, the curve of blood pressure reaches a considerable height, and subsides quickly. When absorption is slow the apex appears later and does not reach so high a level. The response to adrenalin bears a logarithmic relationship to the dose employed and a method of allowing for this is indicated.

Diagnosis and Treatment of Cardiac Neuroses.—Francis W. Peabody (*Northwest Medicine,* March, 1924), says that the treatment of cardiac neuroses is as easy to outline as it is hard to carry out. It consists essentially of mental hygiene and physical development. The former is the more important and much the more difficult for doctor and for patient. First of all it is necessary to get away from the idea of physical invalidism and particularly from the idea of heart disease. One of the most effective means of doing this is by making an extremely careful physical examination, including in it the use of the modern instrumental methods which may throw light on the condition of the heart. The psychological effect of a complete, thorough examination cannot be overestimated, and it is extraordinary to see how often a patient will respond to it and will accept the verdict that he is physically sound.

The next step is to convince him still further by making him take gradually increasing amounts of exercise and by showing him that not only is he uninjured but that he is benefited by it. The patient's attention should be directed to improving his general condition and not to improving his heart. Beyond this it is necessary to procure an interesting and if possible absorbing occupation. One cannot lay too much stress on the importance of regularity of work, of accuracy in performing all technical procedures, and of completing everything that is undertaken. The natural tendency to do things halfheartedly and to avoid concentrated effort must be overcome. It is essentially a problem of character training, and sometimes the problem is as difficult as that of transplanting vertebræ into the spineless jellyfish.

The significance of physical development in the symptom complex of cardiac neuroses was clearly indicated by the results of tests of muscle strength carried out by Dr. Bernard Smith at the Lakewood General Hospital. These tests consisted of measurements of the pull against a spring balance of various muscle groups, according to the method of Martin, and they were applied to large numbers of normal soldiers as well as to soldiers with cardiac neuroses. The average strength test of normal young men was found to be expressed by the figure 25, while that of the patients with cardiac neuroses, and particularly of the group which corresponds to those seen in civil life, was 12. The muscular strength of the patients was, therefore, only about fifty per cent. of the normal.

In the consideration of fatigue it is extremely difficult to differentiate between the purely muscular factor and the mental factor which is associated with it, but the manner in which physical exercises improved the strength tests make it certain that the muscles themselves are not to be neglected. After being put through carefully supervised, graduated exercises many of the patients who had low strength tests were brought up into the normal class. Together with the physical development went a mental and moral development. Physical exercise bred selfconfidence, and with self-confidence came the ability to look at the world from a more normal and sane point of view. Sometimes it is extremely difficult to make these patients with cardiac neuroses undertake any physical exercise because they dislike it and fear its effects, so it must always be carried out under sympathetic but strict supervision until a complete selfconfidence has been obtained. The problems of mental and physical training in the treatment of the cardiac neuroses are difficult and time consuming, and they require a physician with a personality that is specially adapted to them if they are to be carried out successfully. The results that may be attained, however, are well worth the effort that goes into them.

Water Excretion as Influenced by Blood Pressure Response to Sodium Nitrite.—Edward C. Mason (*Journal of Laboratory and Clinical Medicine,* May, 1924), undertook the investigation reported in order to determine whether sodium nitrite altered the urinary output sufficiently and frequently enough to warrant the withdrawal of nitrites during a water test, and whether the urinary response paralleled the blood pressure response. The patients studied were loosely classified in four groups: those with hypertension and nephritis; those with hypertension without nephritis; those with nephritis without hypertension, and those with normal blood pressure without nephritis. In twenty cases studied, sixteen patients had a decreased urinary output with sodium nitrite, the decrease ranging from 1240 c. c. to as low as 58 c. c. The administration of sodium nitrite lowered both systolic and diastolic pressure, but the decrease in systolic pressure was commonly more marked than that of the diastolic. This unequal lowering of blood pressure produced a decreased pulse pressure. Sodium nitrite can alter urinary excretion in only two ways: by peripheral dilatation in the kidney, and by lowering renal blood pressure. The following conclusions are presented: sodium nitrite alters the urinary output sufficiently and frequently enough to warrant its withdrawal during a water test. The urinary response to sodium nitrite does not parallel the response of systolic blood pressure or of pulse pressure.

Effect of Methyl Guanidine on the Blood Pressure.—Ralph H. Major and Walter Stephenson (*Bulletin of the Johns Hopkins Hospital,* May, 1924) noted in dogs injected in the femoral vein with methyl guanidine nitrate and methyl guanidine sulphate at first a slight fall in blood pressure, followed by a sharp rise, then a more gradual rise, reaching its maximum in from ten to twenty minutes. As striking as the prompt rise was the persistence of the high blood pressure, the second maximum being maintained until shortly before death. It is suggested that methyl guanidine, a product of metabolism, if produced in excess or if not excreted by the kidneys, might cause a rise in blood pressure.

Auricular Fibrillation.—W. Dock and S. A. Levine (*American Journal of the Medical Sciences,* May, 1924), comment as follows upon their cases. Regular ventricular rhythm with a rate over fifty-five a minute occurred under digitalis treatment as a transient phenomenon in about two per cent. of 614 cases of auricular fibrillation. Attempts were made unsuccessfully in three cases to vary the ventricular rate by vagal stimulation or vagal inhibition (atropine). There is no proof that this mechanism is due to constant partial block similar to that of regular ventricular rhythm in auricular flutter, although this remains a possibility. There seems to be definite evidence that digitalis in many cases accelerates the dissociated ventricle.

Effect of Acetylsalicylic Acid on Cardiac Irritability.—W. L. Mendenhall and Harriette F. Camp (*Boston Medical and Surgical Journal,* February 21, 1924), say that acetylsalicylic acid has a stimulant effect upon the heart muscle, as indicated by a lowering of its threshold upon electrical stimulation. Its stimulating effect is directly upon the heart muscle, and is not due to paralysis or inhibition of the vagus mechanism. The drug is depressant to the heart muscle only in concentrations much higher than is likely to occur even in enormous doses of the drug.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, SEPTEMBER 3, 1924

Medicolegal Notes.

"VACATION" WITHIN MEDICAL PARTNERSHIP AGREEMENT.

A partnership agreement between doctors contemplated that if any member of the partnership took a vacation for more than six weeks in any one year, he should suffer a reduction of income accordingly. A vacation of six weeks was provided for each partner "without any deduction being made from his part of the fees and profits for the year." The Montana Supreme Court, Kettlekamp v. Watkins, 225 Pac. 1003, applying the ordinary and popular definition of the word "vacation," as "an intermission of procedure; a stated interval in a round of duties or employment; freedom or relief from duty" to the present case, holds that vacation clearly includes absence from the duties of the partnership from any cause, and would include absence from the business on account of sickness. The agreement was held to contemplate a final division of the profits at the end of the year and not oftener, and periodical divisions without reference to the time each partner was absent were held to be advances, and not a construction of the contract as entitling members to a longer absence than six weeks without deduction.

RELATIVE POSITIONS OF PARTY FIRING AND DECEASED NOT DETERMINED BY DIRECTION OF GUNSHOT WOUNDS ALONE.

The California Court of Appeals holds, People v. Salaz, 225 Pac. 777, that it was error to permit a medical expert to testify that he could "positively state," in a murder case, that the person who did the shooting was in front "and towards the left," and that "he was not immediately in front, but what we might call diagonally towards the left and in front of deceased." The court said that the question whether the direction of a gunshot wound in the body of a deceased indicates the relative positions of the person firing the shot and the person receiving it is not a matter of expert opinion evidence, and it has been held by the California Supreme Court that it is error to allow a physician to testify to his opinion upon that question. There were other factors besides the course of the bullets in the body which must be looked to in order to determine the relative positions of the accused and the deceased in the present case when the shots were fired; and the question was for the jury from a careful consideration of all the evidence.

ACCIDENT FROM X RAY RAISES NO PRESUMPTION OF NEGLIGENCE.

The Pennsylvania Supreme Court holds, Nixon v. Pfahler, 124 Atl. 130, that the rule that an action against a physician for malpractice can be sustained only by proof of his negligence, and that the burden of such proof rests upon him who asserts it, is not changed because the practitioner uses an x ray instrument. The plaintiff, while having x ray photographs taken of her teeth in defendant's offices, was injured by an electric spark which struck her right knee and passed down and out at her foot. What caused the electric current to leap from the wire through the air to the patient's leg, as it seemed to have done, was unknown; and there was no evidence that such an accident could have been anticipated, or that it resulted from any fault of defendant.

"The x ray machine," the court said, "is indispensable to the healing art, and the mere happening of an accident from its use creates no presumption against the instrument or its operation. It is necessary for those engaged in the medical profession constantly to employ dangerous agencies, like electricity, radium, surgical instruments, poison, anesthetics, etc., and if prima facie liability attaches for an accident resulting from the use of one, logically it should from the use of any other, and the practitioner employing such would be practically an insurer of the safety of his patients, which the law declares he is not. The question of liability does not hinge upon the dangerous character of the agency employed, but upon the manner of its use, as to which the presumption of due care is in favor of the practitioner, until overcome by evidence to the contrary."

ADMISSIBILITY OF X RAY PHOTOGRAPHS IN EVIDENCE

If the correctness of x ray photographs is established by the testimony of the person making them, or if they are identified by the surgeon under whose general direction and for whose use they were made, and by whom they were used in the diagnosis of the bodily injury, they are admissible in evidence.—Robinson v. Payne (N. J.), 122 Atl., 882.

PETITION FOR SERVICES TO THIRD PERSON

In an action to recover for medical services, medical supplies and nursing rendered by plaintiff to a third person, the petition alleged a liability of defendant on the theory that the third person was a dependent member of defendant's family, and that defendant was legally and morally responsible for necessities furnished her. The Texas Court of Civil Appeals, Powell v. McGee, 258 S. W., 257, held the petition defective for failure to allege the facts of dependency.

ANESTHETIST NOT LIABLE FOR CARELESSNESS IN OPERATION

The Kentucky Court of Appeals holds, Jett v. Linville, 259 S. W., 43, that, since it is a well established rule in surgical operations that the anesthetist is directly chargeable with the physical condition of the patient in the operating room, and his attention must always be directed solely to administering the proper amount of the anesthetic and continuing its supply in just such proportions as will insure the patient's remaining in a comatose condition while the knife is being used, he cannot be held responsible for any alleged carelessness in the operation, in which he did not take part.

NEGLIGENCE CAUSING INJURY

In an action for malpractice in reducing the dislocation of plaintiff's right arm, injured in an accident, the Oklahoma Supreme Court found, Ballaine v. Drake, 224 Pac., 947, that there was nothing in the evidence tending to show that any character of treatment would have effected a cure of the arm, or that any mode of treatment would have procured better results. Although upon the trial the plaintiff proved that her arm was useless, there was no attempt to show that this condition was due to the lack of skillful treatment, or that there was any treatment known to the science of medicine or surgery that would have relieved the situation. The plaintiff's case amounted to this: She received the injury, employed a physician and failed to recover. The jury could not say from the evidence whether the condition of the arm was due to the character of the injury or to the want of skill and care in treating it. In order to recover damages from a physician for want of proper skill and care, the plaintiff has the burden of showing that the defendant was unskillful or negligent and that the injury complained of was produced by such want of skill or care. There being a failure of such evidence, and no claim that the defendant guaranteed a cure or contracted for extraordinary skill or care, judgment for plaintiff was reversed.

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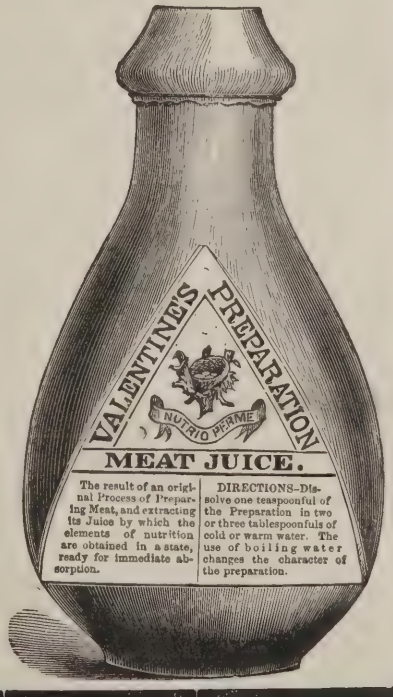
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Miscellany.

Insanity and Art.—Comparatively few people know that lunatics paint pictures, hold their own exhibitions, and even have their work hung at the Royal Academy, says the London *Lancet*, July 19, 1924. These and many other interesting facts were told to the Art Lovers' League by Dr. T. B. Hyslop at Leighton House on July 8th, in a lecture entitled Disease in Modern Art. Dr. Hyslop, an artist as well as an alienist, confined his remarks almost entirely to the work of certified lunatics and showed a remarkable series of slides prepared from pictures which he had collected at Bethlem Hospital. Many of these illustrations showed no signs of disease, while others were mere jumbled masses representing people and other objects. One patient produced quite pleasing studies, but left out the faces of all his models. The progress of cerebral lesions was demonstrated in several sets of pictures. In one all objects became gradually more and more elongated, while in another the artist started by cutting the corners off his paintings and finally drew everything in circles which slowly diminished in size. At the close of his lecture Dr. Hyslop presented his valuable collection of lunatics' pictures and lantern slides to the Art Lovers' League.

Abuse of Tobacco.—The symptoms of tobacco abuse take many forms and are often overlooked, says an editorial writer in the *Medical Press and Circular* for August 6, 1924. Acute nicotine poisoning is characterized by headache, giddiness, vomiting, loss of appetite, and general nervous symptoms; but in addition there may be arrhythmia, pharyngitis, tremors, sweating and constipation. In chronic poisoning emaciation is a prominent symptom, accompanied by vague gastric troubles, the localization and periodicity of which lead to various errors of diagnosis. In younger and middle life palpitation and cardiac irregularity are frequently met with, and in later life angina is common. In the x ray picture the size of the heart is usually normal, but the aorta is seen to be enlarged and arteriosclerosis is probably often the result of tobacco abuse. There is also a socalled typical intermittent limping which has been observed in elderly patients, accompanied by sciatic and crural neuralgia. Respiratory catarrh is frequent, urticaria is occasionally met with, and women often exhibit migraine from cigarette smoking. The treatment for tobacco poisoning is prohibition, complete and permanent. In hypertension potassium nitrate and nitrate have given relief, and these drugs have also removed the limping. But the smallest quantity of tobacco will bring back the symptoms.

The Study of Ants.—The solution of the problem of tropical agriculture lies in the control of ants. The average dweller in the Temperate Zone has no conception of the ravages which are committed by the many species, particularly the termites, or white ants. Fenceposts, the underpinning of houses, in fact any wooden structure are devoured by them while the cutleaf or umbrella ant will clean out a garden in a single night so that nothing but bare stocks remain. Recently Dr. Thomas E. Snyder, forest entomologist, Mr. James Zetek, specialist in tropical entomology, and Ignacio Molino, entomological assistant, all from the United States Department of Agriculture, went to Naranjal, midway between Pacora and Chepo, for the purpose of studying the white ant nests there. These termitaria are hard white mounds about six or eight feet high and approximately four feet thick at the base. In the vicinity of Aguadulce, they are even larger, rising as cones to the height of about twenty feet, and giving the field or sabanas in which they are raised the appearance of an Indian camping ground with outspanned tepees. The species which makes these large mounds is known as *Amitermes nedius*. It lives on woody roots and fence posts, digesting the wood so thoroughly that nothing organic is left. To the inorganic residue they add earth and siliceous matter and build it into a cone which rapidly hardens to the consistency of soft stone. The interior of the cone contains living compartments and store rooms. The "soldiers" of this species are provided with curved, sharp mandibles which they use for defense purposes most effectively.

Dr. Snyder came from the United States recently for the purpose of carrying on research regarding the various preparations which have been used as wood preservatives in an endeavor to discover something which will protect wood against the onslaught of white ants. Once started on a building or a piece of furniture nothing now known will stop them until the wood is completely destroyed. At the zoological laboratory on Barro Colorado Island, stumps of wood have been driven into the ground and treated with various chemicals. Observations are being made on the effects of the various preparations studied and the length of time in which the ants will destroy untreated stumps. Inasmuch as there are no less than thirty different species of ants on the Isthmus of Panama, there is a tremendous field for their study here.

The Rights of the Child.—By the present Declaration of the Rights of the Child, commonly known as the Declaration of Geneva, men and women of all nations, recognizing that mankind owes to the child the best that it has to give, declare and accept it as their duty that, beyond and above all considerations of race, nationality or creed:

I. The child must be given the means requisite for its normal development, both materially and spiritually.

II. The child that is hungry must be fed; the child that is sick must be nursed; the child that is backward must be helped; the delinquent child must be reclaimed; and the orphan and the waif must be sheltered and succored.

III. The child must be the first to receive relief in times of distress.

IV. The child must be put in a position to earn a livelihood and must be protected against every form of exploitation.

V. The child must be brought up in the consciousness that its talents must be devoted to the service of its fellowmen.

The Declaration of Geneva has already received many adhesions, and it was broadcast, for the first time, on November 21, 1923, from the Eiffel Tower (Paris), the speaker being M. Gustave Ador, ex-president of the Swiss Confederation, president of the International Red Cross Committee, and one of the patrons of the Save the Children Fund International Union.

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Diabetes Death Rates.—Interesting statistics concerning diabetes death rates and the geographical distribution of the mortality from the disease have been compiled from the 1923 mortality records of approximately fifteen million policyholders of the Metropolitan Life Insurance Company.

The lowest diabetes death rate among American and Canadian urban industrial populations prevails in the Western Provinces of Canada. For this section, the death rate was only 8.2 per 100,000. Among the 17,000 industrial policyholders in the Province of Saskatchewan not a single death from this disease occurred in 1923. Very low mortality from diabetes was observed also in the Mountain States, the Eastern Canadian Provinces (except Nova Scotia and New Brunswick) and in the Pacific States. The mortality in the East South Central, the West North Central, the West South Central, and the East North Central States, is below the average for the country as a whole, but there are certain States in each of these geographic divisions which show high diabetes rates. Above average mortality was also recorded in Maryland, the District of Columbia, Florida, Wisconsin, and West Virginia. Very low rates were registered for North Carolina, South Carolina, Arkansas, Tennessee, and Kansas.

The highest diabetes mortality in any geographical division was that for the Middle Atlantic States (20.8 per 100,000), followed by New England (17.3). The highest rate for any single State was that for Maryland (23.5), closely followed by New York (23.1), Rhode Island (20.5), and Connecticut (19.4). All of the three Middle Atlantic States, New York, New Jersey, and Pennsylvania, recorded diabetes death rates well in excess of the average for the United States.

In general, the mortality is higher in the Northern States than in the Southern. There is an important racial factor involved in diabetes. The above average mortality in such States as New York, New Jersey, Pennsylvania, Connecticut, and Rhode Island, is very possibly due to the relatively large percentage of those of foreign race stocks, more particularly Jews and Irish, who are very susceptible to diabetes. Ordinarily, the lowest rates will be found in those States which have relatively small numbers of foreign race stocks. When there are exceptions to this, it is because the States have large numbers of elderly people in their populations. Such States would naturally suffer high mortality from diabetes, because the death rate for this disease rises with advancing age.

These comparisons relate to white persons only. The death rates for the colored urban wage earners, however, are more than usually instructive because they show that there is by no means so great a difference between the diabetes death rates of white and colored wage earners as is shown for the two races in the general population. It is a well known fact that, as a group, whites suffer higher mortality from diabetes than do colored persons. In the United States Registration Area, which is about half rural, the white diabetes death rate, year after year, approximates twice that for the colored. No such margin prevails among the wage earners. In this industrial group as a whole, the white diabetes death rate exceeded the colored by only thirteen per cent. In certain geographical divisions like New England, the Middle Atlantic, the East North Central, the South Atlantic, and the East South Central States, the margin is much smaller, and in quite a number of States, notably Massachusetts, New York, Ohio, Wisconsin, Minnesota, Kansas, Virginia, North Carolina, South Carolina, Alabama, and Oklahoma, the mortality rate of the colored exceeds that of the whites—in some cases by very large margins.

The League of Nations and Malaria.—Malaria has increased to a very serious extent in Southeastern Europe since the war. This fact and the world scarcity of quinine are the two important problems on which the health organization of the League of Nations is at present engaged. The Governments of Albania and Greece requested that League commissions be sent to their countries to study prophylactic measures. Commissions are now in both of these countries and a similar inquiry will shortly be carried out in Persia in response to an appeal for technical aid from the Persian Government. According to the Greek Ministry of Health, two million persons, or about one third of the total population of Greece, are suffering from malaria. A special service has been organized to give quinine treatment to three hundred thousand chronic, for which nine tons of quinine will be required. Last February the Government had only half a ton at its disposal. The latest report, says a correspondent of the London *Times*, May 5th, from the Sanitary Council of Persia, calls attention to the appalling sanitary conditions in that country. This news is of special international importance, because a number of pilgrims cross Persian territory. According to the report, recurring epidemics of cholera, plague, relapsing fever, smallpox, typhoid, typhus and malaria, lasting sometimes several years, have occurred throughout Persia during the past eleven years. Of these diseases malaria is the most widespread and probably the most serious. In certain districts it has been so severe that whole villages have had to be abandoned. Southern Russia is another centre of infection. In the Ukraine alone 446,873 cases of malaria were reported during the first ten months of 1923, and local statistics show that only two thirds of a ton of quinine was available for distribution. The latest figures furnished by the health authorities of the Russian railways and waterways show that the situation south of Moscow is very serious, the most heavily infected districts being Turkestan, the Volga and the Caucasus. The number of malaria cases reported on the railways during the first eleven months of 1923 was 438,693, an increase of seventy-six per cent. over the previous year, while the waterways accounted for 128,789 cases, or seventy-five per cent. more than in 1922. Altogether 1,800,000 cases of malaria have so far been registered in Russia. It is possible that the problem of increasing the world production of quinine may shortly be made the object of an international conference, which would also consider establishing depots of cinchona seeds to meet the needs of the countries requiring quinine. The problem is not only one of quantity, but also of price, which has been at least quadrupled since 1914. The conference if held would therefore be faced with serious problems.

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Exerts direct action on cell metabolism,
Increases the respiratory quotient,
Increases the tonicity of the vegetative system,
Raises the metabolic rate,
Is usually sufficient in treatment of

ASTHENIA

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Decrease of Syphilis.—Everyone who has seen patients for the past twenty years at the out patient department of a hospital must have noticed the great decrease that has taken place in the numbers of cases with open syphilitic lesions. Gummata are becoming rarities. Dr. Paul Salmon, of the Pasteur Institure, recently published an article in the *Revue d'Hygiène,* entitled The Disappearance of Syphilis. Reports from many cities in France confirm the fact that the disease, if not disappearing, is rapidly diminishing. According to Dr. Carles, the number of infected women in Lyons decreased one third from 1911 to 1921. Syphilis, of course, is treated much more efficiently than formerly. Dr. Salmon believes that prostitution seems to be reducing the number of its recruits. In these times of economic stress, it is more difficult for the prostitute to make a living. Prostitutes have raised their rates, which has resulted in decreasing patronage. Then, professionals have a vast amount of competition. Since the war, the number of salaried women resorting to immorality to supplement their income has increased, and many women of this class have replaced professional prostitutes. Syphilis was common among public women, but it is rare among these young working women. On the other hand, it must not be forgotten that war eliminated two million men in the most active period of their lives. And the war was followed by an "epidemic" of marriages, which withdrew from circulation, as it were, many potential victims of syphilis. Finally, the army returned to civil life syphilitics, to be sure—but syphilitics who had had intensive treatment. Thus, military medicine, during the war, played an effective prophylactic rôle. Salmon concludes that, to eradicate syphilis, the most important thing is to perfect the treatment and make it truly sterilizing, such as Ehrlich planned. But medical treatment will not alone suffice. Treatment from a moral and social angle is needed. Prostitution is a reservoir for the virus. We must therefore concentrate our efforts on reducing prostitution. The hospital prison of Saint Lazare in Paris is to be demolished. Salmon says that, instead of building a new hospital prison and retaining police supervision of prostitutes, it would be better to use that money to finance a crusade against prostitution, and to come to the aid of prostitutes, who are often the victims of wretched economic and social conditions. (*Medical Press and Circular,* July 18, 1924.)

Delaware Health Education.—The Vocational Home Economics Department of the Delaware State Department of Public Instruction has for the past two years carried on a nutrition program in the public schools, according to the August *Bulletin* of the National Tuberculosis Association. A method has been worked out that can be used in conjunction with other forms of work for the undernourished child in which there is definite medical supervision. The following is a summary of the report for 1923: 1,247 children eight per cent. under weight were taught the rules of proper nutrition. 1,015 of these children gained 2,660 pounds in twelve weeks, averaging 2.6 pounds per child. 146 children lost an average of 1.0 pounds. This was probably due to the epidemic of measles, influenza and colds. 154 children attained normal weight, which means that they were helped to average health and resistance.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

GOITRE: NONSURGICAL TYPES AND TREATMENT. By Israel Bram, M.D. New York: The MacMillan Company, 1924. Pp. 479.

HYGIENE AND PUBLIC HEALTH. By George M. Price, M.D. Third Edition. Thoroughly Revised. Philadelphia and New York: Lea and Febiger, 1924. Pp. 306.

DESCRIPTIVE ATLAS OF RADIOGRAPHS OF THE BONES AND JOINTS. For Students and Practitioners. By A. P. Bertwistle, M.B., Ch.B. Leeds. New York: William Wood and Company, 1924. Pp. 198.

DISLOCATIONS AND JOINT FRACTURES. By Frederic J. Cotton, M.D. Second Edition. 1393 Illustrations from Drawings by Author. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 745.

GASTRIC AND DUODENAL ULCER. Two Lectures. A Record of Ten Years' Experience. By Sir Berkeley Moynihan. Bristol: John Wright and Sons, Ltd.; New York: William Wood and Company, 1923. Pp. 48.

L'HYPERTENSION ARTÉRIELLE. Par Camille Lian et Andre Finot. Bibliothèque des Connaissances Médicales, Direger par le Docteur Appert. Avec 23 figures dans le text. Paris: Ernest Flammarion, 1924. Pp. 247.

THE CULTURE OF THE ABDOMEN. The Cure of Obesity and Constipation. By F. A. Hornibrook, F.R.C.S., D.P.H. (Irel.). Preface by Sir William Arbuthnot Lane. New York: William Wood and Company, 1924. Pp. 67.

COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION. Edited by Mrs. M. H. Mellish. Volume XV, 1923. Published June, 1924. 410 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 1377.

COMMON SYMPTOMS OF AN UNSOUND MIND. A Guide for General Practitioners. By G. Rutherford Jeffrey, M.D., F.R.C.P.E., F.R.S.E. With Foreword by Sir James Chrichton Browne. New York: Paul B. Hoeber, Inc., 1923. Pp. 268.

THE ANATOMY OF THE NERVOUS SYSTEM. From the Standpoint of Development and Function. By Stephen W. Ranson, M.D., Ph.D. Second Edition, revised. 284 Illustrations. Philadelphia and London: W. B. Saunders Company, 1923. Pp. 421.

DISEASES OF THE NOSE, THROAT AND EAR. For Practitioners and Students. Edited by A. Logan Turner, M.D., F.R.C.S. Ed. With 222 Illustrations in the Text and 12 Plates, of Which 8 Are in Color. New York: William Wood and Company, 1924. Pp. 413.

ERGEBNISSE DER GESAMTEN MEDIZIN. Unter Mitwirkung hervorragender Fachgelehrten. Herausgegeben von Prof. Dr. Th. Brugsch. Fünfter Band, 3. und 4. (Schluss-Heft. Mit 29 Abbildungen im Text. Berlin und Wien: Urban und Schwarzenberg, 1924. Pp. 623.

DISEASES OF THE EYE. Handbook of Ophthalmic Practice for Students and Practitioners. By George E. de Schweinitz, M.D., LL.D., Sc.D. Tenth Edition, Reset, with 434 Illustrations and 7 Colored Plates. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 865.

FERTILITY AND STERILITY IN HUMAN MARRIAGES. By Edward Reynolds, M.D., and Donald Macomber, M.D. With Section on Determining Causes of Male Sterility, by Edward L. Young, Jr., M.D. Illustrated. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 285.

DISEASES OF THE CHEST AND THE PRINCIPLES OF PHYSICAL DIAGNOSIS. By George William Norris, M.D., and Henry R. M. Landis, A.B., M.D. With a Chapter on the Electrocardiograph in Heart Disease by Edward B. Krumbhaar, Ph.D., M.D. Third Edition, Revised, 433 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 933.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 6 NEW YORK, WEDNESDAY, SEPTEMBER 17, 1924 WHOLE No. 2289

Consideration of Familial Diseases of Locomotion*

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The term familial diseases implies that certain pathological states repeat themselves in several members of the same family, run an identical course and develop independently of exterior causes. Therefore they do not include epidemic diseases caused by microorganisms which may affect members of the same family, such as acute anterior poliomyelitis or encephalitis lethargica. They do not include syphilitic disorders which may attack several children but which were transmitted by the parents by virtue of an intrauterine infection from an outside microbic agent. They do not include congenital anomalies resulting from general or local diseases of the fetus, which have their effect on the growth and development of the entire fetal organism or of a part of it. Familial disorders are disorders of the germ plasm itself: the ova or the spermatozoides contain in themselves originally a latent morbid taint which leads to the evolution of an abnormal type.

In presence of any given anomaly it is highly important to determine with precision whether it is morbid and the result of an accident in the life of the fetus or else it is inherent and hereditary. In the first case the damage is confined to the carrier of the anomaly and will no more be likely to be transmitted through heredity than any lesion which occurred in the extrauterine life. In the second case, on the contrary, the affection is inherent and belongs to the group of etiological factors that are capable of exercising their influence on subsequent generations. Familial diseases, therefore, constitute a problem of heredity.

If one draws a parallel between disorders transmitted to the descendants with those present in the ascendants, almost invariably a similarity in the form is found. For example, arrested development in the intellectual domain finds its source in an analogous condition of the ascendants. Various psychic disorders of the psychoneurotic individuals originate chiefly in a similar psychic heredity, demonstrating thus the existence of disturbances of the same character in the ascendants. In physical heredity one observes a predisposition of an organic character, such as cerebral congestion, headaches, apoplectiform insults, cerebral fatigue, abnormal impressionability of the cerebral neurones to toxic factors, precocious senility by virtue of a specially transmitted power of cerebration. There are therefore substantial reasons for admitting that heredity generally speaking is expressed by transmission of similarity, and more in the fundamentals of the latter than in its form. If sometimes we do observe dissimilarity of the transformation in hereditary characteristic units, we are dealing in reality only with apparent changes of form but not of basic elements. The latter are the source of the cardinal hereditary phenomena irrespective of their form. What is commonly called predisposition in morbid functions of a physical, intellectual, moral, emotional or volitional domain, is the predominant feature transmitted directly by the fundamental psychopathic or physical disorders of the ascendants.

The most illustrative examples of such occurrences we find in the familial diseases, since, as it was already mentioned, pathological conditions are observed in several members of the same family independently of all external causes.

Myopathies which were first described by Duchenne de Boulogne in 1861, are a type of familial diseases. Cases have been described how a muscular dystrophy of facioscapulohumeral variety, with its progressive invasion of the upper and lower extremities, also of the thorax, has been observed in brothers, sisters, and cousins. This same affection may appear in subsequent generations, either in the children of the affected persons or even in the offspring of some brothers or sisters who happen to remain normal and escape the invasion of the defect. We are now in possession of facts showing that almost all apparatuses of organic life are susceptible of presenting disorders and lesions characteristic of familial diseases.

To Charcot and his pupils belongs the merit of observing a family character in some diseases of the cerebrospinal system. Familial diseases of the locomotor system were the first studied and they are the best defined at the present time. The best examples of this group are found in ataxia of Friedreich's type and of Marie's type.

Friedreich's ataxia is characterized by incoordination of movements of the tabetic and cerebellar type, by choreiform muscular instability, by intention tremor, loss of tendon reflexes, nystagmus and finally by deformities of the spine (scoliosis), also of toes,

*Read at a meeting of the Eugenics Research Association held at Cold Spring Harbor, Long Island, June 14, 1924.

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which are in hyperextension. Anatomically one finds a posterolateral sclerosis, atrophy of the cells of Clarke's columns, of the direct cerebellar tract, of the anterolateral tract and of the posterior roots. This affection is familial, is observed in some members of the same family irrespective of the sex.

In Marie's type one finds incoordination of movements of distinctly cerebellar type in the lower and upper extremities, intention tremor, disturbances of vision due to optic atrophy and contraction of the visual fields, increased tendon reflexes. Anatomically there is a manifest atrophy of the cerebellum especially of its lateral lobes, diminution of Purkinje cells, but there are no sclerotic or inflammatory lesions; the spinal cord as well as the brain are intact. The family character of this disease is striking. In Sanger Brown's case for example five generations of one family investigated contained fifty-five persons, of whom twenty-one were affected. Not all generations were equally involved. It is interesting to note the variety of the ages at which the affection commenced to show itself in this case. The age of forty-six persons was in the first generation, forty in the second, twenty in the third, fourteen in the fourth.

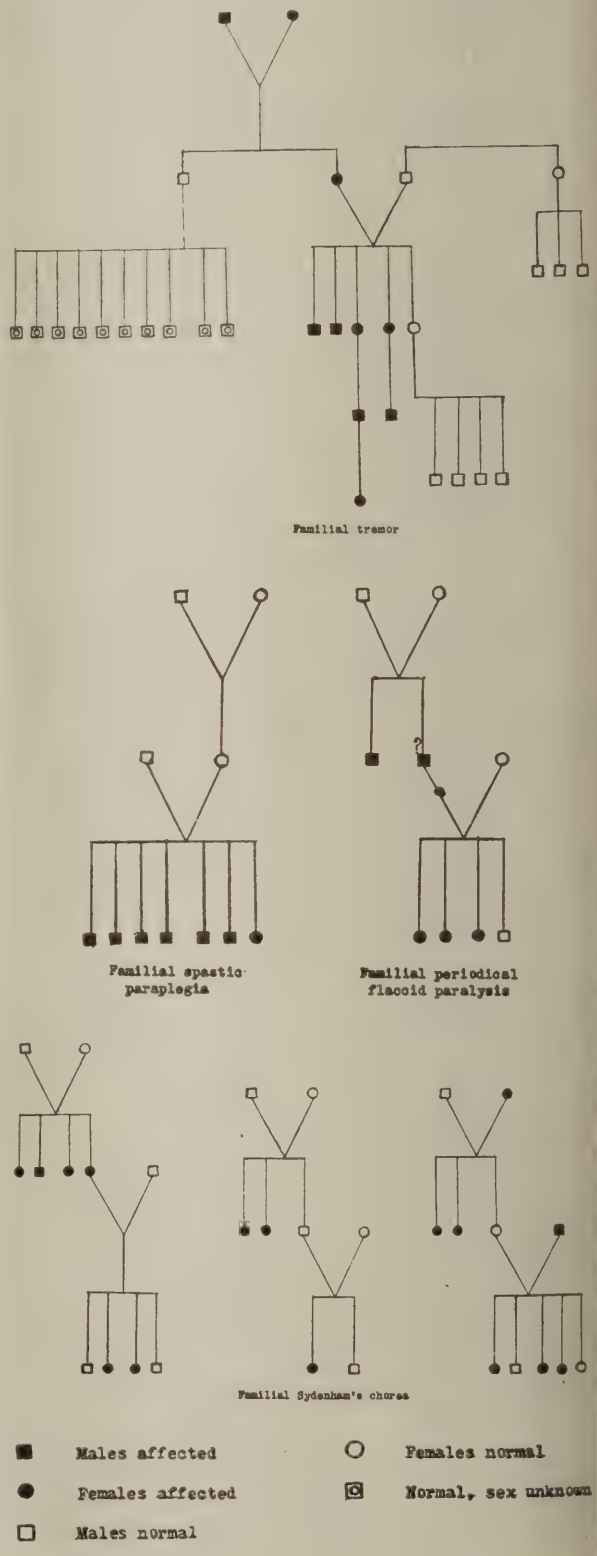
Familial atrophy of the cerebellum, as well as of the pons, medulla and cerebellar peduncles without sclerosis, was observed by Bourneville and Crouzon. During life there is rigidity of all the four limbs and extremely low grade of mentality.

In amaurotic family idiocy besides the mental arrest and optic atrophy with the characteristic spot in the retina there is also a spastic or flaccid paralysis of the extremities. The pyramidal cells of the cerebral cortex are more or less atrophied in this affection.

Muscular atrophy is another affection which may be encountered in several members of the same family. Although the classical interpretation distinguishes three types, viz., myelopathy, myopathy, and primary neuritic atrophy, nevertheless there are intermediary forms which partly belong to one or another group. A family character may be observed in any of the forms or groups of muscular atrophy. For example, in the case of primary neuritic type (Charcot-Marie) recorded by Dubreuilh, the mother and fifteen brothers and sisters were affected. In Déjérine's case the same type was observed in the grandfather, grandmother, mother, son and a brother of the mother; in Hoenel's case of the same type twenty-five persons in four generations were found. In this form the atrophy begins in the peroneal group of muscles and gradually gains the other extremities. The anatomical substratum is seen in atrophy of the peripheral nerves, degeneration of the posterior columns and of the cells of the anterior cornua.

Hoffmann's form of muscular atrophy is seen in successive children of the same mother or father. It commences early in infancy and particularly around the roots of the limbs. Gradually it keeps up its progressive course and when it invades the respiratory muscles, life is threatened. Anatomically there is a destruction of the cells of the anterior cornua and degeneration of the anterior roots and peripheral nerves.

In myopathies the central nervous system as a rule is intact, but the muscular fasciculi are primarily undergoing atrophy, and the perifascicular connective tissue undergoes hypertrophic changes. Several members of the same family may be affected, but the morbid type varies from one family to another and presents intermediary subvarieties. In the latter the atrophy may commence in different localities. Atrophy may affect some muscles always in the beginning of the morbid process, others in the course of the disease, while still others remain almost in-



variably intact. There seems to be a relationship between the precocity of muscular development and their predisposition to myopathy. Curiously enough, one observes in some families only the male members affected and the disease is transmitted solely by the women who themselves have not presented muscular atrophy.

Atrophy is not the only muscular affection that disturbs locomotion. Myotonia, myoclonia, chorea, tremors are the other disorders which are sometimes seen in some members of the same family.

Thomsen's disease or familial myotonia, as is well known, is a disturbance of muscular function which consists of a sudden contraction of the muscles as soon as the patient makes a movement. The disorder is transitory, although it produces a temporary disability. The disorder is predominant in the lower extremities, although it may occur in the upper ones and in other muscles, tongue and eye included. The affection is conspicuously familial in character. Thomsen himself suffered from it and he describes eleven cases in his family. Females are apparently exempt from this affection. The muscular force is diminished in spite of the fact that the muscles are hypertrophied. However, the development of the muscular fibre is incomplete, it remains in a state similar to an embryonic state. Evidently we are dealing with a familial disorder, manifesting itself in a defective development of muscular tissue.

Among other forms of familial disordered locomotion may be mentioned various muscular twitchings and contractions. Chorea, myoclonia, tremor are affections which may be encountered in members of the same family. I have a record of three families in whom a large number of members presented at various ages and in two generations episodic attacks of Sydenham's chorea. In Huntington's disease which is a chronic form of chorea the hereditary and familial character is typical. Here the affection makes its appearance in the middle age of life affecting both sexes equally. It is progressive and terminates with an enfeeblement of the intellect and complete physical deterioration. The hereditary character is direct and in the cases recorded in the literature it never missed one generation.

Tremors as distinguished from choreic movements may also be present in several members of the same family. There are in existence socalled families of tremblers.

The morbid phenomenon commences at a certain age and increases as the individual advances. In Debove and Renaut's genealogical tree of one family both conjugal parties were tremblers. Almost all their descendants with very few exceptions were tremblers.

Spastic paralysis of the lower extremities with all the characteristic changes in the reflex action due to an atrophy of the pyramidal tracts has been observed first by Strümpell in several members of the same family. Since then quite a number of similar records have been reported, either in the pure form or in a form intermediate between this affection and the heredocerebellar ataxia. The disease usually appears between fifteen and thirty years of age. In one family that came under my observation there were seven members affected with spastic paraplegia: four of them began to show the spasticity at the age of three. Six of them were males and one a female. In families thus affected, there is usually present some degenerative basis; either insanities, neuroses or alcoholism, consanguinity, syphilis. In the above case one paternal uncle was a paranoiac and a sister of the mother died at the age of thirty in dementia precox. This type of the disease remains usually unchanged until the end of the patient's life, but sometimes, years after the onset, new symptoms develop and the picture of multiple sclerosis becomes apparent. In the family spastic paralysis we are dealing with a primary systemic degeneration of the pyramidal tract which is a result of a congenital malformation.

Oddo and Audibert in France have called attention to a curious affection which is characterized by a periodical or intermittent loss of power, in the extremities, mostly in the lower, and occurring in several members of the same family. The paralysis is sudden and occurs usually after a more or less prolonged period of muscular inactivity. It is flaccid in character and during the attack the affected muscles cannot contract on stimulation; electrical reactions are greatly diminished or totally abolished.

I had the opportunity of observing a family of four children, three of whom, all girls, and one uncle, brother of their father, suffered from intermittent attacks of complete loss of power in the limbs. The children's disability was confined to the arms, but the uncle's to the legs. Suddenly without warning and after an exertion they would be absolutely unable to move their limbs. The condition would last but two or three hours. During this period the tendon reflexes could not be obtained and the electrical contractility was much diminished to faradic and galvanic currents. Sensibility and intelligence were intact. In the intervals between the attacks the motility and muscular power were perfectly normal; the electrical contractility was normal and the reflexes were all present. In every other respect the four patients were in good health. The father of these children told me that frequently, but not regularly, for many minutes at the time, he also would suddenly lose power in the hands. A vigorous rub brings the hands to normal. This condition occurs to him in the midst of perfect health and without feeling fatigued in any other part of the body. He evidently presented a *forme fruste* of the same affection with which his children and his brother were afflicted.

Holtzapple reported a history of seventeen patients distributed over four generations of the same family, who presented symptoms of periodic paralysis. The affection probably is due to a congenital defect of the muscular tissue which under the influence of a physical effort is unable to contract to a degree sufficient to carry out the work assigned to it.

To sum up the present study of disorders of locomotion occurring in one family of one or several generations, we must admit that the subject is one of structural anomalies created by evolutional disturbances. They are variations from the architectural normal type. They create a predisposition which exists at the time of conception and is therefore transmitted to the product of the latter.

The knowledge of the laws of heredity and of the biological modifications which are the resultant of

pathological modifications of the creating organisms is of paramount value from the viewpoint of eugenics. Familial diseases or defects are governed by the general laws which are identical with those which regulate the transmission of normal morphological characteristics from the highest to the lowest point of the animal scale. Morbid heredity, as far as familial diseases are concerned, is controlled by the same laws as physiological heredity.

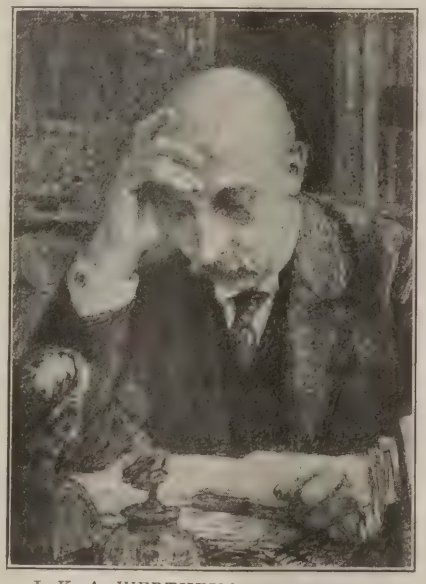
1812 Spruce Street.

Dutch Neuropsychiatry and Its Representatives*

SMITH ELY JELLIFFE, M.D.
New York

On this occasion, when this society welcomes as its new president Dr. E. G. Zabriskie, a worthy scion of one of the earliest Dutch families of our beloved New Amsterdam and Breukelin, it seems a happy coincidence that I should be able to turn your attention not to the achievements of what the split off new world descendants of those worthies of the seventeenth century have accomplished in the field of neuropsychiatry, but rather to point out even if but very fragmentarily, what they are now doing at home in Holland.

Even though my discussion must of necessity be but a touch and go, and though I can not show you to the full what the present day Dutch school of neuropsychiaters is accomplishing, it may be stated that for so small a group it probably presents the greatest number of eminent workers in this field today.



J. K. A. WERTHEIM SALOMONSON

It is in a measure to be regretted that we have not preserved a little more of that old Platt-Deutsch that first set its stamp on New Amsterdam, Brooklyn, Hoboken, Flatbush and many other names which reach our ears daily, else the work of these Dutch workers would be better known to us as they, for instance, have been recorded in the *Neurologisches en Psychiatrische Bladen,* now in its twenty-sixth year, as well as in several excellent Dutch medical journals. In the past ten years, however, Dutch investigators have used more French and German, and many record their observations in English even in their Dutch magazines.

Had I the space I should have liked to present in orderly review the development of Dutch neuropsychiatry. In this I could have culled from the work of a Miss Mesdag, who has recently prepared a full bibliography of Dutch neuropsychiatry, but I must forego this pleasure and take you directly into Holland and point out the few spots in the medical landscape that my time permits.

I must first regretfully call attention to the recent death of two of Holland's most genial workers, J. K. A. Wertheim Salomonson and C. A. Pekelharing.

On September 16, 1922, J. K. A. Wertheim Salomonson, rector of the University of Amsterdam, died suddenly of heart disease at the age of fifty-eight. This was a severe loss for science in Holland as well as in other countries, for his research work has been of great value.

Dr. Wertheim Salomonson worked very much in science, but he was not a dry scholar. He was a lover of art, had a great aptitude for music and was also a first rate sportsman. Alike in his person, in social intercourse, and at work, he maintained the appearance of an aristocrat. He trained many neurologists and all had a high opinion of him and admired his scientific methods.

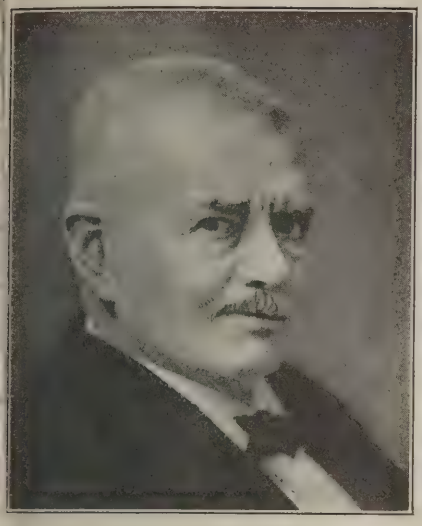
The work of Pekelharing, whose death also took place quite recently, was chiefly in biochemistry and I must needs pass him without further mention save as I may touch upon the problems of muscle tonus to which Pekelharing contributed many years ago.

The present dean of Dutch neuropsychiatry is Professor C. Winkler, for many years in Amsterdam in the university as professor of neurology and now for nine years professor of psychiatry, and director of the University Clinic at Utrecht.

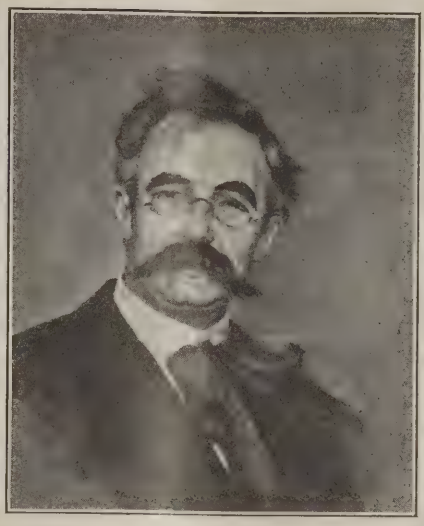
Winkler has a modern psychopathic hospital. Here for the past ten years he has done work which has been an inspiration to his fellow workers. They have shown their admiration of this work in gathering together now in eight volumes his *Opera Omnia.* These volumes are a mine of neurological lore. It is not without a certain amount of interest to look at Prof. C. A. Pekelharing's introduction written on the occasion of the presentation of these volumes, commemorative of the twenty-fifth anniversary of Winkler's professorship. They include practically all of his work, omitting only two atlases prepared in collaboration with Dr. Potter.

Winkler was born in 1855; his father and grandfather were physicians. He was a precocious boy. At eighteen he entered the University as a medical

*Illustrated Talk to New York Neurological Society, February 6, 1923.



C. WINKLER



LOUIS BOLK

S. DE BOER

student. He there became much intrigued by pathological anatomy under Talma and his graduate dissertation was upon tuberculosis. It was not a remarkable dissertation. At his graduation he entered the surgical service of a communal hospital at the Hague under an uncle. He soon left there for Utrecht to be an assistant to Talma and to devote his life to research. Here he very early turned to neuropathology and to neuropsychiatry.

It was in 1876 that special chairs in psychiatry were voted to be instituted in the Dutch universities by the Government, but they were dilatory in providing the necessary budgets. Schroeder von der Kolk was among the earlier teachers in this specialty. In 1885, having developed a fairly large private clientele, Winkler was appointed lecturer in psychiatry and then visited the newly established German Kliniks of Heidelberg, Gudden at Munich, and Meynert at Vienna. His opening address on Psychopathology in October, 1885, (*Opera Omnia,* Vol. 1, page 143) can be read at this time to advantage. His interest in the functions of the brain soon led him to devote much time to brain surgery in which direction he was in constant liaison with Guldenarm, the surgeon of the university, his two years' surgical service at the Hague having made him an excellent surgical assistant. He soon founded a polyclinic service in neurology and for the study of the neuroses and later gave courses in criminal anthropology to the law students.

All of this time the Government hesitated to supply funds and accommodations for a clinic along broad lines and he was constantly engaged in political propaganda to advance the cause of neuropsychiatry. Finally he resigned from his Utrecht lectureship because he could not get the politicians to move and finding better opportunities for psychiatric research in Amsterdam he was appointed in 1896 professor in that university. During nineteen years he advanced this work in Amsterdam, the rich results of which are collected in the volumes of which I have spoken. He attracted a large number of students, and also founded the neuropsychiatric society and by reason of his activities as a member of the Royal Academy of Sciences, he brought to fruition the foundation of a Central Institute for Brain Research. Dr. Ariëns Kappers, one of his pupils, and of whom we shall speak, was made its director. A Central Brain Commission was founded at this time. Some of you are acquainted with the marvellous

R. MAGNUS

A. DE KLEIJN

E. JELGERSMA

plates which this Commission, with the aid of the Royal Society have published. Von Monakow of Zürich is still one of its most active members. Its work has been seriously interfered with by the war.

In his psychiatric work, founded on exact anatomical knowledge, on physiological experimentation, his surgical training having made him an adept in this line, he did not neglect clinical observation. "Therapeutic results" was his constant aim, and the end of his researches was to benefit those with whom he came in direct contact. His laboratory researches were always guided by personal clinical problems. He was, as Pekelharing observes, a master in every aspect of his work. His observations were thorough, his diagnostic acumen keen, his research patient and profound and his therapeutic results striking. His was a remarkable catholicity of point of view and he always deprecated the narrower issues of founding a "school" which was so outstanding an attribute of the German universities.

In the meantime the Utrecht situation was advancing and finally by 1900 a chair of psychiatry was actually financed. Ziehen came from Jena and took charge in a modest way for only three years. Heilbronner was his successor, but not content with the meager provisions put up with by Ziehen, demanded a proper clinic in the modern sense. By 1907 the dilatory Government accepted but it took them until 1913 to finally complete the full plan. In September, 1914, in the trying days of the opening of the war, Heilbronner died suddenly of heart disease.

It was then that the authorities turned to Winkler. Now it was their time to worry. Utrecht had finally, 1914, achieved what thirty years previously Winkler had fought for. He finally, after much persuasion, agreed to take over the Clinic. His inaugural address was on the Relationship of Psychology to the Physiology of the Nervous System (*Opera Omnia,* Vol. 5, page 541). It was a summing up of three previous discourses, the study of which offers the most complete insight into Winkler's position at that time. The first, The Localization of Psychical Functions in the Central Nervous System (*Opera Omnia,* Vol. 5, page 63); the second On the Relative Value of Localization (*Opera Omnia,* Vol. 5, page 291) and the third The Structure of the Cerebral Cortex and New Facts in the Localization of Our Perceptions (*Opera Omnia,* Vol. 5, page 471).

Winkler here develops his major premises that anatomical, physiological and clinical research on the structure and function of diverse portions of the nervous system are essential. They are detailed requisites which, as Pekelharing remarks, many who would think of themselves as philosophers, are disposed to regard somewhat with disdain. But throughout it is clear that Winkler constantly is preoccupied with a most difficult problem—one of much importance, namely that of the soul and its relations to the body. In a strictly scientific manner, following his natural history bent, he has regularly explored this difficult territory constantly seeking to arrive at conceptions which would make matters comprehensible. Originally much taken with Wernicke's ideas in psychiatry his tendency to keep free from any of the limiting advocacies and controversies more or less due as a follower of a socalled school, led him more and more into broader biological formulations. He went, as it were, in and out of schools, an individualist and an originator.

Thus, as may be seen on the title page of his great *Manuel de Neurologie,* Vols. VI and VII of his Opera Omnia, he was an advocate of the energic hypothesis that the human body was a capturer, transformer and deliverer of energy. "An Effort at Grouping in Functional Systems, the Pathways and Centres of Diverse Localization, whereby diverse Sensory Impressions can be transformed into Reflex Activities." This is a program rigidly adhered to, so far as present day research will permit.

Much as I should like to present a résumé of his detailed researches, which cover an enormous field, space does not permit. I must content to stress some of his, to me, most fascinating suggestions concerning certain functional aspects of the auditory nerve. Inasmuch as we shall take up the work of some others in this regard, notably that of Magnus, Kleijn, the general situation may be glimpsed. After treating at great length and in detail the proprioceptive functions of the members and their biological functions in the nutritive complex, Winkler in his chapter on the eighth nerve, brings out that this group is both phylogenetically and ontogenetically a cutaneous one and that of all of the proprioceptive systems it is probably the oldest group. To grasp its history one must go back to the marine habitat in order to trace the results of adaptation to water shock with their consequent physical variations to pressure. The proprioceptive system he suggests was originally created here, since modifications in the water supply needed appropriate adjustment in the maintenance of the nutritive complex. Here, as undoubtedly for the tracing of the phylogeny of many other functions of vertebrate animals, one must go to the invertebrates.

The statocyst organ, advantageously studied in marine molluscs (Pterotrachea is the one chosen), is the beginning of this history. Two facts have been demonstrated regarding this organ: 1, Its sensorial cells can be affected by rhythmic vibrations by the intermediation of the otoliths; 2, It exercises an influence on the equilibrium (i. e. space adjustments) of the animal. Coelenterates and crustaceans possess this organ and Kreidl has shown a remarkable uniformity of function throughout an ascending series of invertebrates.

The displacements of the otoliths in the statocyst, as the origin of the regulation of very complicated movements in which the head, the trunk and the eyes are involved, has become, largely through the investigations of Breuer, a valuable point of departure for the functional study of the labyrinth. It is striking that the first development of a central nervous system should arise with the appearance of the statocyst and the eye, and there flows from this, says Winkler, the conclusion that the labyrinth is the most ancient of the sensory organs. Moreover, the fundamental organization of the statocyst maintains itself in all of the animal series even through the superior vertebrates, in which those modifications in the form of the organ arise which have come to be termed the labyrinth. We shall not trace the gradual modifications in their development, these have been done with great acuity by

Schepman, also a Dutch naturalist, but arrive at the elaboration of an octavolateral system which is to be considered as an ensemble. In this are to be distinguished, the vestibular and cochlear nerve components. The organ of Corti is representative as the receptor of the cochlear component, gradually elaborated as the stimuli took on more and more of a terrestrial character, and what we designate as sound wave components, were added to those of a more aquatic nature. Notwithstanding the fact that the two elements of the octavolateral system seemed quite different, careful research shows an essential unity. Whereas it has been assumed that the two functions for higher vertebrates termed "spatial adjustment" and "hearing," have developed separately and were by accident more or less united, a view to which Jelliffe and White gave assent in the first three editions of their *Diseases of the Nervous System,* we are convinced on going over the evidence presented by Winkler and those quoted by him that this is incorrect, and adopt the view in our new fourth edition (1923) that the hearing function has gradually evolved out of the primitive water shock mechanism of the statocyst, to respond more and more to air shock reflex activities.

Thus bodily displacement has come under the reflex response of two types of stimuli originally one, but gradually separated. The cochlea has come to represent an organ originally reacting to a different type of water shock, but more and more to air borne stimuli, audition, and has resulted in intermittent tonic muscular reactions, rhythmic movement reflexes such as swaying, the dance, singing and finally speech reactive activities. The recital of the barest outline of the details of this gradually developing synthesis either from standpoints of structure or function would consume many hours. I leave it to your individual reasoning capacities to grasp how the intermittent reflex activities through the larynx, the tongue and the muscles of the lips have acquired their special importance. *"Because, above all they conserve as a heritage of ancient function, the remarkable and particular faculty of all the static organs, namely to reproduce by reflex pathways the phenomena which have given rise to the stimulus."* When a shock of water acts upon the body with a certain force, the statocyst determines a displacement of the body of similar importance (adaptation). In the same manner for the shocks which come through the air. The sensory organ (Corti) excited by sound vibrations, is capable of reproducing the same vibrations by the organs which it commands. This is a characteristic function of the acoustic apparatus, to determine by integrated reflex pathways, in the phonation mechanism, also widespread in the body musculature, vegetative, and this must be emphasized, as well as sensorimotor, intermittent contractions, in that it reproduces a sound (or a movement) identical to that which has been the point of departure of the excitation. The sound stimulus is thus reproduced as a rhythmic wave by the phonating mechanism of the animal that perceives it. It is but a corollary that the acoustic mechanism has developed more and more a unique mode of response. In the simpler sensory organs the initial stimulus is responded to directly, whereas for the intermittent stimuli which have become more and more complex, a constant tonic apparatus, as a foundation, is essential. Thus has language been developed and with this human intelligence. Here the reflex responses have become highly subtle and complicated, but still governed by the same fundamental laws. The organ of Corti has come to represent the complex receptor apparatus in the zones of language, its telencephalization—as the cortical integration mechanisms. (See pages 155, 156, Vol. II, Winkler: *Manuel de Neurologie.*)

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In the mammalian octavolateral system (labyrinthine complex) there are to be distinguished at least four neuroepithelial structures: a, the striæ nervosæ in the semicircular canals; b, the maculæ, or taches sensorielles of the utricle and saccule; c, the tristæ, or cretes sensorielles, of the ampoules; d, organ of Corti, in the cochlea. The most recent of these is the organ of Corti, which reaches its complete development only in the mammalia. The cretes sensorielles of the ampoules are older; the oldest of all the structures are those of the maculæ.

Winkler, following Magnus and de Kleijn, compares the maculæ to the primitive statocyst of invertebrates. These organs primarily function for the maintenance of general muscular tonus. They collaborate with the proprioceptive stimuli from the body. The function of the cretes sensorielles of the ampoules is of later evolution, and is more specialized. They have appeared for the registration of the movements of the head and for the head organs, chiefly the eye movements. They remain in close liaison with the general tonus functions of the maculæ. *These regulatory functions are strictly condensations of geotropic reflex activities and are purely unconscious.* Rhythmic activities have not yet taken on their social rôle. These are still to develop as various forms of more conscious bodily displacement, marching, dancing, unison actions, and other movements, chiefly initiated through sound waves, and closely related with the development of laryngeal and buccal proprioceptive stimuli asso-

ciated with the developing speech function. Thus the organ of Corti has come to be developed in response to a wider conscious acquisition of control of bodily movement, including tongue movements, i. e., speech, in its social orientation function. These reflexes for bodily orientation are no longer geotropic and entirely unconscious, they are taking on sociotropic activities, partly conscious, and in the highest cultural types becoming consciously socially valuable. The organ of Corti then is functioning in response to rhythmic or interrupted stimuli from the bodily organs and from the tongue through its symbol formations. How Winkler further develops his argument must be left to the reader, who will be well repaid to go carefully over the details (p. 127).

Nowhere has the reviewer found so sound or penetrating a view of the development of the affective response to sound stimuli through muscular displacement and imitation. What the newer psychopathology is finding out with reference to unconscious social reactions to tone, to voice, etc., is well worked out by Winkler in his analysis of the unconscious reflex awakening of sonorous response to motor stimulus. Thus is laid down a true physiology of affective effector release from the sound—and vision—of muscular stimuli in the environment. We thus see how extremely valuable language has become as a type of stimulus as well as release mechanism through gradual condensation of language symbols. Thereby the body and its organs are not required to go through severe and dangerous displacements if through language the necessary socially valuable protective stimulus and discharge can be found. I have presented to this society from time to time the definite corollary of this in speaking of the affective discharge value of the symbol, particularly in its relation to a dynamic pathology in chronic disease of various types, and this complete analysis of the pathways through which and by means of which this is made possible is of much interest. The whole psychopathological argument relative to human response to emotional stimuli is brought nearer to structural facts in this masterly chapter on the eighth nerve.

Muscle tonus.—During the past ten years the subject of muscle tonus has been actively discussed by a number of workers of the Holland school. This cannot be expounded exhaustively and I regret that my collection of portraits is still incomplete. Among the workers whose contributions to the subject have entitled them to world wide recognition and discussion are De Boer, Boeke, Dusser de Barenne, so far as the sympathetic participation in motor innervation is concerned, and the work of van Rijnberk, Winkler, Jelgersma, Magnus and Kleijn and Brouwer.

Concerning the socalled double motor innervation of striped muscle tissue even the Dutch workers are at considerable loggerheads. No attempt will be made here to conciliate the various views nor to present a complete historical resumé. There are plenty of these in the literature. It may be recalled that Langelaans (1), Brondgeest, Pekelharing and his pupils, Hoogenhuijze, Verploegh and Harkink whose names are bound up in the discoveries, were all among the earlier workers of this problem.

J. G. Boeke (2), anatomist at Utrecht as early as 1909, by means of Bielschowsky preparations showed small neurofibrillar end rings, and end nets, at the end of fine nonmedullated nerve fibres. These were quite distinct from the ordinary end plates well known as constituting effector muscle organs of the pyramidal system. These socalled accessory nerve endings lie hypolemmally on the muscle fibers embedded in the granular sarcoplasm of the fiber. Boeke believe these to be of vegetative nature. These sympathetic fibers were found by many others and their presence as structures may be said to be fairly well established.

Whereas the morphological problem (3) may be said to be fairly well established the physiological one is actively discussed here. De Boer's studies may be of interest since he has been one of the most active of this group in claiming the plastic tonus function of these vegetative effector mechanisms. With the study of their pathways to the cord and their higher synaptic junctions in the striatum of our own Ramsay Hunt, we are somewhat, though not securely, acquainted. Concerning the peripheral activities the Dutch observers have apparently separated mechanical from chemical vegetative functions and the chief discussions focus as to the respective merits of plastic mechanical factors, and chemical nutritive factors, in the study of which latter Pekelharing and his pupils and Dusser de Barenne have made some interesting observations.

The analysis of the plastic tonus mechanism is one of much complexity—some of the notions of de Boers, privat dozent of physiology in the University of Amsterdam, may be alluded to (4). Following a clue given by some work by Meyer and Weiler (1916) by H. Fröhlich, and H. H. Meyer, Liljestrand and Magnus and others, that isolated muscular cramps due to tetanus can be completely inhibited by intramuscular injections of novocaine without any loss in the usual sensorimotor functions of the muscles, DeBoer repeats the experiments and brings them in liaison with the earlier ones of Brondgeest, who obtained loss of plastic tonus by section of the posterior roots, and of his own and of Dusser de Barenne by section of the rami communicantes. These results all converge to afford much foundation for the hypothesis that a vegetative factor of plastic tonus is to be found in the effector nerve nets of Boeke and that this type of tonus is under sympathetic control. De Boer has attempted to disprove Liljestrand's and Magnus's position that novocaine poisoned the muscle proprioceptors, and also Dusser de Barenne's opinions that the tonus reflex arc is conducted through the motor cerebrospinal pathways. He shows that sodium sulphocyanate can bring about the tetanus-like reactions herein referred to and they can be entirely abrogated through the concomitant action of novocaine.

These, his latest experiments along lines of pharmacological dynamisms, coupled with his earlier ones (veratrine and electromyogram studies) enable him to come to a fairly definite conclusion that skeletal muscle tonus has a definite peripheral autonomic reflex are component (5).

I need not point out the numerous correlates that

low from such a conception, and what a flood of xperimental possibilities pour from them, particularly in the numerous perplexing muscle syndromes ne meets with in encephalitis, in catatonia, in tics, n the psychoneuroses, etc. Dr. Dana in a personal ommunication thus speaks of a marked increase in asal metabolism in one of his postencephalitic arkinsonian patients. This might well be studied rom the point of view of Pekelharing's researches n protein (creatinine) metabolism and the tonus echanism of striped muscle. Dusser de Barenne n support of his position while admitting that the ibres and accessory en dplates of Boeke are vegeative in origin does not believe, however, that they ave anything to do with mechanical, i. e., Brondeest tonus. These are due to the motor nerve fibres. hemical muscle tonus is their function. How this perates is still a mystery (7). Dusser de Barenne's 8) work on sensory localizations in the cerebral ortex, I can mention only, and also only touch upon is contribution to other relationships studied beween the sympathetics and muscle tone. Thus decerebrate rigidity does not seem to be modified when he muscles are deprived of their sympathetic reflex rcs.

These studies lead us into the most complex of eurological problems, especially as we try to trace he upper coordinates of these tonic mechanisms. hese open up into a wilderness of clinical observaions and experimental researches in the solution f which the entire neurological world is engaged. ince Sherrington published his volume on integraion actions of the nervous system, the Vogts their ork on the striatum, Wilson his observations on he lenticular nucleus, no problem has been more ctively discussed than the subject of muscle tonus nd its higher synaptic controls.

I purpose calling your attention here solely to he work of two or three of the Dutch workers with hese problems. Chiefly Van Rijnberk, whose reearches on the cerebellum have been alluded to, and o Magnus and Kleijn. I regret I must be so curory.

In 1915 Van Rijnberk on the basis of the newly cquired notions concerning the double motor inervation of voluntary muscles, subjected the paraoxical lingual phenomena of Vulpian to a reanalyis. This was made a contribution to the study of nuscular tonus and its innervation (9).

Until Boeke had in 1913 made it fairly certain hat there was a vegetative supply to striped muscle he older hypothesis to account for Vulpian's linual paradox remained inadequate. By the aid of hese newer views Van Rijnberk sought to clarify he situation. It is not impossible that the muscular onic phenomena following facial palsies are of this ature. Pursuing the question further Van Rijnerk subjected certain observations of Sherrington n the "foot phenomena" to further investigation nd found they fell in the same category. He then 1917) advanced to the study of muscle tonus in ecerebrate rigidity and entered the illimitable field f the significance of muscle tonus as a determiner f postural reactions, a field which as you know Engish physiology has cultivated with special persistnce and good fortune.

I must leave Van Rijnberk at this point and consider for a moment some of the work of Magnus and Kleijn whose masterly researches have concerned themselves with certain aspects of this same problem. Magnus and Kleijn are pharmacologists in the University of Utrecht. One could spend several evenings, in discussing the work of the past ten years by these investigators. Following up Sherrington's Studies in Decerebrate Rigidity they showed that the phenomena were partly related to synaptic stations lying in the brain stem, caudad to the plane of the anterior corpora quadrigemina and cephalad of the plane of the calamus scriptorius. The cerebellum seems to play no essential part in this postural reflex syndrome. This "standing decerebrate animal" as naturally one might suppose, was not a simple automaton, however, and Magnus and Kleijn in decomposing some of the elements in the syndrome first made clear that labyrinthine and neck reflexes could be separated. The *tonic labyrinth reflexes* arose from stimulation of the otoliths. The *tonic neck reflexes* arise in the proprioceptive nerve endings of the cervical muscles. Further analysis of labyrinthine components showed that each labyrinth influences the tonus of the limb muscles of both sides equally, the trunk and eye muscles bilaterally but chiefly contralateral, the neck muscles of one side, contralaterally Magnus went on to analyze the socalled thalamus and midbrain animals by extending the transections caudad of the calamus scriptorius. The syndromes arising have common tonus factors, but different metabolic reactions. Temperature variation is one reaction affected. Magnus is analyzing this complex problem of the neural pathways of temperature regulations. While at St. Moritz, where I saw him in 1921, he was studying certain peripheral processes set up by stimuli of the gases in the waters there. The tonus is "normal." The "postural reflexes" (Stell reflexe) of Magnus are contrasted with the tonic reactions of the decerebrate animal (Steh reflexe).

In the postural reflex four components have been described. 1. Head labyrinthine reflexes. 2. Body wall reflexes influencing head positions. 3. Neck muscle reflexes, combined with, 4. Trunk and limb muscle reflexes.

Two of these handle the position of the head in space, two that of body displacement. Magnus and Kleijn have very ingeniously analyzed the reactions to gravity and pressure stimuli in their socalled *Brettversuch.*

As one rises in the phyletic series, in monkeys for instance, eye muscle reflex participations in the stellreflexe are striking. I can not in my short time go further (10). Most of the work here referred to has appeared in *Pflüger's Archiv.* A later paper, Magnus: Körperstellung and Labyrinth Reflexe beim Affen. *Pflüger's Arch.* 193, 1922, 396, is not included in Walshe's review. (A. de Kleijn and A. de Kleyn, both spellings used by author.)

The Cerebellum. I have no intention at this time, or indeed at any time, to attempt a presentation of the subject of the cerebellum. This can be found elsewhere (11). I shall speak only of some living Dutch neuropsychiaters who have made most important contributions to our knowledge of cerebellar

morphology and physiology. As already intimated, in this small group of men, the researches of all have crossed each others' trail, so that it is quite impossible to isolate the researches. Thus Brouwer's valuable work on the Olives as Part of the Cerebellar Components would with reason come within the frame of these paragraphs. But I shall first briefly mention the work of one of the great innovators in cerebellar physiology: Bolk. The name of that illustrious English anatomist, Elliot Smith, is closely linked with that of Bolk. His was, in a sense, the stimulus which determined a break on the part of both from older views concerning cerebellar structure. Previously to the newer views of Smith and Bolk the cerebellum had been studied chiefly, as it were, from above down, whereas with Bolk's schematizations, the comparative anatomy method, from below up, came to its most satisfactory expression. Smith worked primarily with Edentates, Bolk with Lemur albifrons and their work has now been fairly well recognized as fundamental. On the physiological side Van Rijnberk, professor of physiology in Amsterdam, has made many important studies. Many of his researches as well as those of numerous others of the Dutch school are found in the *Folia Neurobiologica,* a journal started by Ariëns Kappers which unfortunately has had to cease publication for a time.

What Bolk really contributed can only be glimpsed here and I can do no better than to borrow somewhat from Tilney's masterly summary of the Evolutionary Significance of the Cerebellum: "Bolk, as the result of a study of the cerebellum in a large comparative series, still further advanced the ideas put forward by Elliot Smith. He concluded that the several parts recognizable in the mammalian cerebellum have definite functional significance and represent areas of central control over definite motor performances in the body.

(*To be concluded*)

The Principles of Reeducation of the Muscles in the Treatment of Hemiplegics

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Nearly twenty-four years ago I called attention for the first time to the encouraging results to be obtained from motor reeducation in the treatment of hemiplegic patients. At the International Medical Congress of 1900 (1), and in the *Archives de neurologie* (2) of the same year, I emphasized the need of ascertaining, above all, the amount of motion which the hemiplegic case is capable of carrying out, and which should be patiently sought, even if present only as a minor residuum. Since that time I have had the opportunity of caring for many hemiplegics, both in the Charcot Clinic at the Saltpêtrière, in my private practice and at the Val-de-Grâce. I feel justified in asserting that, whatever may have been the origin of the hemiplegia, these patients retain in varying degrees the power of motion in their paralyzed muscular apparatus. Such motion is more or less appreciable according to the state of paralysis and the period of time the disturbance has existed. In a general way, indeed, muscular hypotonicity, atony and atrophy do not involve all the muscles at once. The topography of the muscular atrophy in hemiplegics varies in different patients, and frequently, in the same patient, at different stages of the condition. Wernicke (3), Mann (4), and Clavey (5) attempted to lay down a definite topography of the muscular hypotonicity of hemiplegics. Their topographical conclusions are far from perfect, yet show that in the majority of cases hypotonicity (atony and atrophy) involves approximately the same muscles. Thus, in the lower extremities the muscles very extensively involved are as follows: iliopsoas, tensor fascia, femoris, sartorius, quadriceps, peronei, flexors of the foot, extensor brevis digitorum and interossei. Those partly involved are: The glutei, the gracilis and the tibialis anticus. In the upper extremities, the muscles most seriously involved are: The supraspinatus and infraspinatus, subscapularis, middle portion of the trapezius, serratus magnus, deltoid, triceps, supinator longus, supinator brevis, radiales muscles, opponens pollicis, long extensors of the fingers, interossei and abductor brevis pollices. These conditions may, as already stated, vary from one case to the next; for, according to the opinion of my chief, Professor Déjérine, "In a hemiplegic all the muscles participate more or less in the paralysis."

Again, these topographical conditions depend likewise on the contracture of the antagonists. This contracture, which is very common in residual hemiplegia, sometimes follows rather quickly upon flaccid hemiplegia; Gilles de la Tourette found it in seventeen out of twenty cases (6), and Schafer in sixty per cent. of cases (7). According to Brissaud and Souques, it is almost constant (8). In my opinion, contracture sets in in the hemiplegic already at the beginning of the disorder; it is more or less pronounced, according to the state of hypotonicity of the affected muscles, but if one knows how to detect it, it is never wanting. It is this contracture which often misleads when the observer thinks he has found motility in the paralyzed member. Upon carefully examining the motility of an extremity or portion of an extremity in the hemiplegic case, one ultimately discovers that the motion produced occurs principally in the contractured muscles and that the predominant activity of these muscles often results in motor impotence, the muscles in a state of contracture completely overbalancing the function of those which are in a state of hypotonicity. Accord-

ngly, it is necessary in muscle training so to select he exercises that their effects shall be concentrated pon the hypotonic muscles, in spite of the contracture. These exercises should have for their purpose he procuring of easy and regular locomotion for the patient, as well as the ability to make use of his rm.

In the case of the lower extremities, the initial reducative exercises are intended to activate the unction of the flexors and extensors of the thigh n relation to the pelvis and the movements of the eg on the thigh and of the foot on the leg. These xercises, which are repeated two or three times a lay, consist of simple movements carried out in four tages, viz., 1, flexion of the thigh on the pelvis; 2, xtension of the leg on the thigh; 3, flexion of the leg n the thigh, and 4, placing of the foot on the ground, vith flexion of the foot on the leg. The exercises hould be carried out in the recumbent, sitting, and tanding postures. Apart from these exercises, the hysician should teach the patient to sit up in bed, nove to the edge of the bed, sit on the edge of the ed, and get out of bed. In the last mentioned exerise the patient should support himself either on the rm of an assistant, on a chair, or on a cane or stick. He should also be shown how to get onto the bed, o sit on its edge, and to get into the bed without utside assistance.

Equilibration exercises are next proceeded with, vith the aid of stools or footstools of varying height; eld by an assistant and later supporting himself o a cane, the patient must learn to place the foot of the ound side on these various stools and remain thus a few seconds or even minutes without support. Then, he must learn to get up onto a platform wenty-five to thirty centimetres high and to descend rom it, in the following way: To get onto the platform he must place on it first the foot of the sound ide, next his cane, and lastly the foot of the affected ide; to descend from it, he places on the floor first he affected foot, next the cane, and finally the sound oot. In the case of a leftsided hemiplegia, the foregoing directions may be summarized thus: To get p, right foot, cane and left foot; to get down, left oot, cane and right foot.

To teach my hemiplegics to walk, I make use of he procedure which consists in exaggerating the lexion of the thigh on the pelvis and in placing one foot in front of the other—a procedure opposite to hat of Erben (9), in which the patient always puts forward the sound limb. These exercises restore he activity of the flexors of the lower extremities during motion and permit of the avoidance of circumduction of the limb. When these exercises are egun, the patient has to be given support on the paralyzed side; then, when it is seen that he is able to carry them out by himself, the cane is used as support, being held by the hand of the sound side. This arrangement allows him to walk with a triangular basis of support, the feet occupying two angles of the triangle and the cane, the third. The act of walking is carried out in three phases: 1, Carrying of the affected foot forward; 2, placing of the cane at a point opposite this foot, and 3, carrying of the sound foot in front of the affected foot. As soon as the patient is seen to be able to balance his body on his legs, the act of walking is reduced to two stages: 1, Carrying of the affected foot and the cane forward; 2, carrying of the sound foot forward. The patient always starts with the affected foot, taking care to flex the legs on the pelvis as strongly as possible. The placing of the feet on the ground should be carried out with complete extension of the leg on the thigh; this is the only way for the patient to learn to walk without swinging his leg out laterally.

Certain rules must be followed in the process of training hemiplegics to walk. In the first place, care must be taken that the hemiplegic patient shall never fall down, as such a fall will engender in him a fear of walking and greatly retard his progress. Next, there should be no haste in getting him to walk alone, unless one is certain that the balance of his body on his legs is almost perfect. Again, a tendency on his part to plunge into walking at any cost must be curbed, for there is danger that he will not properly flex his legs on his pelvis and will consequently fall into the habit of throwing his limb out at the side in locomotion. He must not be allowed to walk bent over nor by dint of marked exertion. He must, in addition, be taught to place the affected foot on the floor in abduction and to ground his heel in doing so. This last desideratum is obtainable with persistence and permits of antagonizing effectually the contracture of the posterior muscles of the leg.

Reeducation of the process of locomotion in hemiplegics is not complete until they have been taught how to go up and down stairs. In either instance the mode of procedure is the same. To walk up an incline, the patient first puts his sound foot forward, then places the cane on a level with this foot and carries the affected foot near to the sound foot; to descend the incline, he puts his affected foot forward, likewise his cane, and then brings his sound foot toward the affected foot. In going up stairs, he first places his sound foot on the next higher step and then brings his cane and his affected foot onto the step on which the sound foot has already been placed. In all these exercises the sound leg is alone capable, especially at the beginning of the exercise, of keping the body balanced while in a state of semiflexion.

In hemiplegics I also make use of walking exercises carried out with the horizontal ladder I introduced for the functional reeducation of the war wounded. This ladder, made from three long beams five centimetres high, is divided by short crosspieces, likewise five centimetres high, into a number of compartments each thirty-five centimetres long and twenty-five centimetres wide. These compartments are so arranged that the compartments of one series alternate with those of the adjoining series. The crosspieces are removable and can be replaced by board partitions ten, fifteen, twenty and twenty-five centimetres high. In placing his feet in the compartments of each series the patient is compelled, in order to transfer his sound foot into the next compartment, to stiffen his affected leg, balance his body on this leg and see to it that this state of balance continues as long as the sound foot is not in position in the compartment. Again, in transferring the affected foot into the next compartment, he is compelled to flex the thigh on the pelvis and the leg on the thigh as completely as possible and to lift

up the foot as high as possible; otherwise, the affected foot may be stopped by the board and the exercise not be carried out properly. Furthermore, in order to place the affected foot properly in the next compartment without losing his balance, he is obliged to stretch the leg against the thigh as much as he can. Finally, if the exercise is to be executed correctly, the patient is compelled to keep his back perfectly straight. In all these exercises the hemiplegic patient trains his flexors and extensors and the muscles of his back.

Training the hemiplegic to walking out of doors is carried out by stages. The first time, he is called upon to cover a distance of five hundred metres. Then the distance is increased each day by fifty or one hundred metres, until he is able to cover satisfactorily one or two kilometres at a stretch. Care is taken to have him rest a sufficient time to enable him to undertake the return journey. Undue fatigue is to be avoided. These walks should be carried out once daily in the city, or at least twice daily in the country. A stay in the country is of great benefit to these patients and enables them rapidly to regain their morale and the major part of their muscular function.

Reeducation of the muscles of the upper extremities in hemiplegics is more difficult of execution. There are two main reasons for this: In the first place, the hemiplegic patient develops a more persistent will to learn to walk than to overcome the lack of power in his arm. Again, the considerable number of small muscles, having to do with the most delicate kinds of movements, which are involved in the paralysis, regain their power more slowly and call for greater patience and perseverance than are required in learning to walk. Indeed, nature herself contributes to a great extent in encouraging this form of negligence on the part of the hemiplegic, since, like many amputation cases, he ultimately gets accustomed to meeting his needs with but one arm. None the less, training of the muscles of the upper extremity permits of securing in many cases, if not a complete recovery, at least a very marked improvement in all movements.

When one has succeeded in overcoming, even partially, the arthritis of the scapulohumeral joint and the consequent ankylosis, training of the muscles appertaining to this joint should be proceeded with. The patient should be taught how to abduct his arm from his body and to move it forward and backward, at first while holding up his forearm in order to relieve it of its weight, then while resting the affected hand, even if closed, on the hand of the trainer held at varying elevations. Correct execution of movements should not be aimed at from the start in the process of reeducation. Later, when movements of elevation of the arm anteriorly, laterally and posteriorly are easily carried out, one should endeavor to correct the execution of these movements. In the meantime, the patient should be trained to place his hand over his head, on the back of his neck, on the opposite shoulder, on the different components of a piece of lattice work, on the back of a chair, on the table, on the walls, etc.

In obtaining extension of the forearm I have the patient proceed both in the recumbent, sitting and standing positions. In these three postures the patient is made to train himself to extend the forearm from the arm without jerking, steadily, and, as much as possible, at command. At first, use is made of small dumbbells, which, by their weight, assist in extension; then, the patient is required to go through the exercise without any assistance. When this result has been obtained, exercising of the fingers is proceeded with. Herein the sagacity of the reeducator must match his patience and perseverance. How many of our colleagues—and not the least of them—have been unduly severe to hemiplegics in their disheartening prognoses when, seeing the arm and hand in a condition of contracture, they have told them that nothing more can be done! How many hemiplegics have sacrificed their upper limb in following such deplorable advice. This sacrifice of the upper limb of hemiplegics has occurred simply because many practitioners have been and are still unaware that reeducation of the muscles, patiently applied, can ultimately master, if not completely, at least partly, this contractured condition of the hands of hemiplegics.

To demonstrate the fact that the prognoses referred to are often more than moderately prejudicial, I take the liberty of reproducing for my readers the personal case record of a colleague and friend of mine, suffering from leftsided hemiplegia, whom I treated by systematic massage and muscular reeducation. This personal record is reproduced with the consent of its author, who, as a professional man, was able to appreciate the inner significance of the training exercises and who applied them with the greatest benefit. It must be confessed that cooperation on the part of the patient contributes much toward the attainment of the object of the exercises, and that such cooperation is not always readily secured. Such was far from being the case, however, with my friend, an eminent physician and widely known practitioner, who manifested a desire himself to describe the manner in which he assisted my efforts to obtain recovery. I shall now let him speak himself, and am convinced from the start that the reader will appreciate the reproduction *in extenso* of this interesting personal record.

PERSONAL CASE RECORD OF DR. X

"Onset of the disorder, December 27, 1921. Progressive leftsided hemiplegia following a stroke, without loss of consciousness. In the morning, in my room, upon completing my morning toilet, I felt dizzy; I lay down and noticed that the limbs on my left side no longer responded to my will; the dizziness having passed off, the power of motion returned. Several times during the morning there was a feeling of dizziness with hemiplegia, followed by return of motor power; in the afternoon, however, the hemiplegia was definitely established and the dizziness disappeared. No headache nor premonitory symptom had caused me anxiety on the preceding days. The day before, I had walked as usual. I recollected merely that for some weeks I had felt a kind of tension and pulsation, without pain, which I referred to the right petrous region, but which had been present only intermittently.

"The established leftsided hemiplegia was complete, at first flaccid, but quickly followed by contracture of the flexors of the fingers and toes, exag-

gerated reflexes and atrophy of the muscle groups in a state of hypotonicity (triceps, extensors of the fingers, quadriceps extensor, extensors of the toes and lateral peronei). No subjective symptoms on the succeeding days; appetite retained; likewise, sleep, after insomnia for the first few days mainly on account of worry.

"I remained in bed, then in my room, for a month, swinging my leg out in walking. I saw Dr. Kouindjy the first time on February 15, 1922, a month and a half after the onset, and placed myself in his care for séances of massage and reeducation, which were carried out three times a week. Upon examination, Dr. Kouindjy made note of the muscles with lowered tonicity, chiefly the triceps, extensors of the fingers, quadriceps extensor, peronei and extensors of the toes, i. e., the antagonists of the contractured muscles. He endeavored to strengthen the hypotonic muscles by the different forms of massage, by hot air and by the active movements comprised in the procedure of reeducation. I must add that, even before seeing Dr. Kouindjy, I exercised the stronger muscles, such as the biceps and the flexors of the fingers, and that I was already satisfied with my ability to lift a chair with these muscles; but I very soon recognized the danger of the course I was following: I was strengthening the muscles in a state of hypertonicity and increasing their contracture. At the instance of Dr. Kouindjy, on the other hand, I worked at the extension of the forearm from the arm and at extension of the fingers, lifting with the extensors a weight attached by a cord to the extremity of the fingers; the weight was progressively increased.

"I also exercised in order to strengthen the power of supination. Thus, gradually the extension of the fingers and the supination succeeded in overcoming the contracture in flexion and pronation of the fingers and forearm. Similar steps were taken to master the contracture of the biceps.

"In the lower extremity, massage and reeducation were instituted with the same object, viz., to strengthen the hypotonic muscles in order to overcome the contracture of the hypertonic muscles—the latter consisting of the flexors of the leg on the thigh, the flexors of the toes and the tibialis anticus. Instead of extending the foot, a form of motion which came back rapidly, I labored, on the contrary, to flex the foot on the leg, and brought the heel in contact with the floor. I also practised extension of the leg on the thigh and abduction of the anterior end of the foot (lateral peronei), and not adduction (tibialis anticus).

"In practising all these movements, including those of the shoulder, I made use of various forms of apparatus. Thus, I admit that massage and reeducation can be administered only by some one specializing in this line of treatment and not by any untrained person. Reeducation, however, does not aim solely at the restoration of movements, but also at the performance of motor acts. A motor act is a combination of simultaneous and successive movements. Thus, the act of inserting the hand into the trouser pocket calls for several movements: Flexion of the forearm on the arm, carrying the elbow backward, throwing the coat back with the flexed fingers, extending the hand on the forearm, extending the fingers, then extending the forearm in order to cause the hand and extended fingers to enter the pocket. As long as my extensors were inferior in power to the flexors, I was unable to insert my hand in my trouser pocket, as this cannot be done with fingers flexed. I succeeded in doing this only three months after the onset of the disease (about April 1st). Putting the hand in the vest pocket is more difficult, as it calls for greater extension of the hand, with the elbow farther back.

"Similarly, the act of rolling a cigarette calls for successive flexion and extension of the forefinger while the thumb executes contrary movements. A motor act once accomplished, however imperfectly, can always be repeated. Rapidity of movement comes with habit, muscular power and flexibility. Accordingly, I endeavored to do as many things as possible with my left hand while eating, dressing, etc., and very often, in seeing little children play at country fairs, I compared myself with them in their manner of executing movements.

"Thus, following are the stages through which I passed in the process of recovery:

"In the beginning of March, 1922, I succeeded in rolling cigarettes, dressing and undressing without assistance; at the end of March, I could put my hand in my trousers pocket, and during April, that is, the fourth month after the onset of the disorder, I could drink from a glass and fill the glass from a decanter with my left hand. Locomotion was restored almost to normal, even without a cane, and likewise the climbing of stairs at first, then the descent of stairs —more difficult. Then, I trained myself to move the fingers separately, to extend them, to oppose the thumb and the other fingers—including, lastly, the little finger—in order to restore their flexibility.

"From the point of view of professional activities, the successive steps toward recovery were these: From the fourth month on, I was able readily to carry out percussion and palpation—two important means of examination for the physician, which call for complete extension of the fingers and hand. Then, I was able to administer hypodermic injections, general anesthesia with Ombrédanne's device, and apply dressings with firm pressure of the bandages. Finally, on May 30th, exactly five months after the onset of the disease, I personally assisted one of my friends in an operation for appendicitis.

"Such is the account of my case and of the valuable results obtained from reeducation of the muscles and systematic massage."

CONCLUSION

There is nothing to add to the personal case record of my friend, who presents a sufficient explanation of the principles underlying the application of the reeducating exercises used in the treatment of the upper extremity in hemiplegics. These exercises are intended in particular to reeducate the muscles in a state of lowered tonicity, which are the seat of a more or less advanced process of atrophy, according to the degree of paralysis and the length of time the condition has existed. With the assistance of the patient's will power and intelligence, the condition is ultimately conquered; it is merely necessary not to discourage him and condemn his arm to immobility from the start.

32 RUE DE LIÉGE.

Thromboangiitis Obliterans

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THEORIES OF CAUSATION

Thromboangiitis obliterans is one form of peripheral vascular disease which has attracted considerable attention in the past decade, and which seems to be increasing in importance as its diagnostic symptoms become better known. Since 1856, when Charcot (1) first called attention to this disease in men, although previously described by Bouley (2) in a horse, an extensive bibliography has arisen. For a time the condition known as thromboangiitis obliterans was confused with other conditions which it simulated in one or another regard. It is this seeming relationship which has created an extensive bibliography as well as a multitude of names. To cite some of the names which have been used indiscriminately to designate this disease, would illustrate the confusion that still exists in the minds of some observers regarding this symptom complex.

Erb (3) named this condition dysbasia angiosclerotica; Weir Mitchell (4) called it erythromelalgia, later he termed it vasomotor neurosis of the extremities; Walton termed it crural angina; others, intermittent claudication, *Gangstockung,* juvenile gangrene, presenile gangrene, spontaneous gangrene, obliterating endarteritis, local asphyxia of the extremities, acrocyanosis, acroasphyxia, acrosphacelus. Lannois (5) designates it as *paralysie vasomotrice des extremitiés.* By some it is described under the heading of pseudoerythromelalgia, nonsyphilitic endarteritis obliterans; still others have even used the designation Raynaud's disease to cover the above mentioned syndrome. In the past decade Buerger (6) suggested the term thromboangiitis obliterans, on the basis of the pathological changes present in the bloodvessels, and the extensive studies made by Buerger (6) have caused others to name the disease Buerger's disease. Osler (7) prefers to designate endarteritis obliterans as Friedlander's disease, or progressive sclerosis of the arteries. Local clinicians speak of this disease as Russian Jewish disease or Yiddish disease. This affection has often been confused with scleroderma, sclerodactylia, multiple neurotic gangrene, and acroparesthesia.

Not only has this disease been variously named, but many theories and hypotheses have been advanced to explain the phenomena associated with it. The earlier theories were chiefly concerned with the vasomotor and nervous elements of the bloodvessels. According to Erb (2), the disease was an angiospasm. This notion has been shared by only a few American observers, although most German clinicians have been inclined to accept Erb's view. In fact, the most recent publication on this subject, that of Schlesinger (8), emphasizes the vasoconstrictor element in this disease and bases the therapy almost exclusively on this phase. Others have considered it a neurosis, Weir Mitchell's (4) earliest publications describing this disease under the title of a rare vasomotor neurosis. Cassirer (9) and Oppenheim (10) lean toward this viewpoint and have grouped this syndrome under the vasomotor trophic neuroses.

Oppenheim (10) in his text book on nervous diseases considers this disease to be the outcome of a constitutionally defective nervous and vascular system. The majority of patients inherit not only a neuropathic constitution, but are congenitally afflicted with narrow bloodvessels, and a hypersensitive nervous system. He asserts that the stigmata of degeneration are quite common in patients afflicted with intermittent claudication, and there are other evidences of neuropathic disturbance. He is convinced that the disease begins as a functional disorder and after a varying lapse of years the injury resulting from unregulated flow of blood and constriction produces an organic change in the bloodvessels which leads to gangrene. He cites one case where angiospastic symptoms were present for eighteen years before it culminated in gangrene. Cassirer (10) shares this view and classifies the entire disease as a symptomatic group, subdivision being made according to the symptoms which predominate.

Another theory advanced by some clinicians is that vasoconstriction leading to gangrene is caused by the ingestion of certain toxic substances. According to some it was a form of ergotism due to the ingestion of spoiled corn or rye bread, and its frequency in people coming from regions where rye bread was extensively used was considered confirmatory of this theory. The fact that this disease had a predilection for the male sex in spite of the ingestion of rye bread by both sexes seemed to escape the notice of the adherents of this theory. More recently the theory has been advanced that nicotine plays a very important rôle in the etiology. There is a growing belief on the part of many people that nicotine is not entirely harmless and a great deal of experimental and clinical evidence has been gathered to show that nicotine contributes largely to the production of this symptom complex. Willy Meyer (11) in 1920 after having gone extensively into the bibliography is convinced that this is the etiological factor. Previous to this he attributed this condition to hyperglycemia, and constructed an ingenious theory to demonstrate that there was a high glucose content in the blood which he considered exercised a definite influence on the development of this disease. He termed this condition glycophilia, but abandoned this theory later in favor of nicotinism as the cause.

There are several factors, according to Meyer (11), which are responsible for its causation. First there is the hereditary factor which explains why this disease selects its victims, for the major part, among Russian and Polish Hebrews. These people having been persecuted for so many centuries have a very susceptible sympathetic nervous system, and lay themselves open particularly to the deleterious effect which nicotine exercises on the autonomic nervous system. In addition to this, they are inveterate and chronic smokers. The heavy work which they

are forced to do lays an added strain on the blood-vessels of the extremities. This, then, plus the perverse function of the sympathetic nervous system, induced by the absorption of poisons from tobacco smoke, produces contraction of arteries where there would ordinarily be relaxation, and so the symptom complex of the intermittent claudication occurs. The function of the eliminating glands is likewise diminished which permits accumulation of the tobacco toxins in the system. It is the pyridine in tobacco smoke which destroys red blood cells, and in addition affects the intimal lining of the bloodvessels. Tissue asphyxia results because of the accumulation of lactic acid in the muscle and body tissues which according to Meyer (11) is responsible for the bloodvessel lesions. This, in turn, causes intermittent limping or may culminate in gangrene. The value of this hypothesis in the light of actual researches will be discussed later.

The occupational theory has been advanced by some writers. The first reported case occurred in a sailor, while others affected were either soldiers or sailors in whom the extremities are severely taxed in their occupations. The advent of endocrinology has led other authors to seek the etiological factor in a disturbance of the ductless glands. Some have thought that its predilection for the male sex would be explained by the absence of some substance which ovarian tissue could supply. The therapy guided along these lines has, however, failed to produce any noticeable results. Still others have attempted to explain it on the ground of adrenalin deficiency, and have given adrenalin or adrenal gland containing compounds in the hope that a cure would result. The fallacy of this form of therapy will be discussed later. Tetany and its relationship to the parathyroids has suggested parathyroid medication without any better result.

Finkelstein (12) in New York has administered corpus luteum extract without any unusual result. Of those who lean to the infectious theory of this disease, the most prominent are Buerger (6) and Goodman (13) in this country. Buerger (6) is led to believe on the basis of his microscopical findings that some microbial agent is at the bottom of this disease, although extensive investigation has failed to disclose any type of organism. Goodman (13), on the other hand, believes that typhus fever plays the etiological rôle in this disease, adducing his belief from the fact that the majority of patients afflicted with thromboangiitis obliterans come from regions where typhus fever is associated with marked vascular changes, and is quite often followed by gangrene of the extremities, seems to him further proof that thromboangiitis obliterans is due to the organisms concerned in typhus fever.

Bernstein (14), in collaboration with Goodman (13), carried out serological investigations on thromboangiitis obliterans, and in three out of twenty cases found agglutinations and complement fixation with the organism described by Plotz (15). The value of this work in confirming the theory of Goodman (13) is negatived by the recent work of Schulz (16), da Rocha Lima (17), and Wollbach, who have definitely established that the bacillus of Plotz plays no etiological rôle in this disease. The recent publication of Olitsky (18), repudiating his earlier work proves conclusively that this organism is only a secondary invader, and therefore agglutination tests, with this organism, can be of very little value in deciding any causal relationship of typhus fever to this disease. The rôle that infectious diseases play in the production of arteritis is too well known to incriminate any special bacteria as the specific cause of this clinical syndrome. This will be discussed more fully in the summary of known facts concerning the production of this disease. The favor that focal infections have enjoyed in the past decade found its reflection in the theories advanced by some physicians that bad teeth or tonsils are responsible for this affection. It is quite true that the great majority of people affected with thromboangiitis obliterans have exceedingly bad teeth and infected tonsils, but little relief follows attention to these foci, in spite of their supposed relationship.

Mayeshima (19) in Japan, where this disease is quite prevalent, thought that the disease was due to the viscosity of the blood, and attempted to overcome it by the injection of Ringer's solution. The therapy that has been suggested along this line will be discussed more in detail under treatment. The viscosity theory is shared by Steel (20), who treated a small series of cases with sodium citrate in order to overcome the increased viscosity.

Acidemia theory.—The tendency to seek an explanation for this disease in an altered condition of the blood has led other workers to develop the theory of acidemia as the cause of this disease. Changes in hydrogen ion concentration of the blood on the acid side will lead to vasoconstriction, increased viscosity of the blood, increased tendency to coagulation of the blood and some of the other clinical manifestations present in this disease. Therapy directed towards combating the acidemia has given fairly gratifying results, which has tended to convince the adherents of this theory of its importance.

Combination theory in preexisting injury to blood vessels: A study of the history of a large number of these cases impresses one with the idea that in the majority of cases some preexisting injury to the bloodvessel has occurred, either as a result of frost bite or some traumatic injury subsequent to which infection of the bloodvessel walls developed with consequent arteritis and phlebitis. This is an added factor in the perpetuation of the disease and its progress.

The multiplicity of theories as well as the multiplicity of names suggested for this disease, indicate that we are dealing here with a group of symptoms due to a variety of causes, and while we may have a pathology which varies only slightly, the causes may be quite different. It would, therefore, be more logical to consider the condition of peripheral vascular disease as a syndrome due to a large group of etiological factors.

Some experimental proof has been recently furnished to show the truth of several of these hypotheses. Marcus (21), in Stockholm, has attempted to show that gangrene occurring in Raynaud's disease can be reproduced in a rabbit in whom the condition of local syncope is brought about by the intravenous injection of large quantities of adrenalin. If nothing further is done, a complete restitution to nor-

mal results, but if virulent streptococci are injected septic emboli develop in the constricted vessels of the ear, and gangrene results. This explains the phenomena observed in this disease where vasomotor symptoms may be present for years without gangrene, and then suddenly gangrene develops without any apparent cause.

KNOWN RESEARCHES

There has been comparatively little attempted in the way of experimental reproduction of this disease. Most of the investigations have been of a clinical order. For several years very little was known as far as the pathology of the condition was concerned, because so few cases came to autopsy. In Cassirer's (9) monograph he mentions that the first investigations that were made were those of Weir Mitchell (4), and these represented histological examination of resected toes and excised segments of nerve tissue. Weir Mitchell (4) and his coworkers were looking for nerve changes to explain the agonizing pains from which these patients suffered. He found very little in one case, while in a second case, which was relieved by operation, evidence of neuritis was present.

The first indication that this disease was due to bloodvessel obliteration was furnished by Sachs and Wiener (22) who examined the bloodvessels and nerves of a limb that had been amputated, and found evidence of obliterating endarteritis. Since then considerable work has been done by numerous workers, particularly on the pathological histology of the disease. Buerger's (6) work stands out because it has furnished an explanation for the retrogression of symptoms which is often observed, and which has led many observers to the belief that this condition represents a functional disorder of the nerves innervating the bloodvessel constrictor and dilator muscles. Buerger's (6) work has consisted chiefly in corelating first the condition of migrating phlebitis with this condition, and in pointing out that the inflammatory process involves the deeper bloodvessels as well as the superficial. The arteries, as well as the veins, are involved, the inflammation resulting in an increase in connective tissue. The detailed pathology of this condition will be discussed more fully below in connection with the pathology of the disease. It is this increase in connective tissue which binds bloodvessels and nerves together, and which is responsible for the agonizing pains. Putnam's histological investigations have concerned themselves chiefly with arteries and nerves, and he has found evidence of a neuritis present in addition to a vasculitis, thus confirming Weir Mitchell's (4) original finding.

Buerger (6) and Bernstein (14) have also investigated this disease from a bacteriological viewpoint, and although their investigations covered a large number of cases, they were unable to find in culture, stained sections, or by inoculation methods, any organisms of the spirochetal, acid fast or ordinary pyogenic group. Buerger (6) is convinced, nevertheless, that the histological changes in the veins and arteries point to the existence of an infectious process, and suggests that the infective agent be sought in the acute process in the superficial veins.

Barber (23), in Brooklyn, has similarly sought for the microbial agent of this disease and claims to have isolated in several cases a diplostreptococcus which grew slowly and appeared only in a special medium. In several cases which I have investigated, blood cultures were sterile with the exception of one case in which extensive thrombophlebitis and thromboangiitis were present, and in this patient a long chained streptococcus was isolated from the blood as well as from the affected veins and arteries of the thrombosed limb. The strain died out before it was possible to attempt inoculation experiments. This organism was likewise seen in smears made from the affected bloodvessel.

Marcus's (21) researches become of interest in this connection and may represent the link uniting the conflicting facts elicited in connection with this disease. He found that he could reproduce experimentally in rabbits a condition which he considered was identical with Raynaud's disease. He found that streptococci would localize in bloodvessels constricted by the use of adrenalin and would produce gangrene as a result of a localized thromboarteritis and phlebitis.

The search for indirect evidence of the presence of a microbial agent centred chiefly in immunological tests, first for the presence of the complement fixing bodies present in syphilis, and other infectious diseases, and then the agglutination tests carried out by Bernstein (25) in collaboration with Goodman.

Kaliski and Buerger (6), in 1910, found the Wassermann negative in a group of twenty-nine cases which they studied. The original Wassermann and the Bauer modification were used and controlled by the Noguchi antihuman system. All were cleancut negative although a control group of tertiary syphilis with and without vascular symptoms gave a fairly large proportion of positive tests. This has been the experience of most workers who have carried out Wassermann tests in this disease. The theory advanced by Goodman (14) that typhus fever was the etiological factor prompted him to carry out a series of agglutination tests with serum from thromboangiitis cases against the bacillus of Plotz (15). Out of twenty cases whose serum was tested for agglutination, three reacted with a somewhat increased titer. Aside from the fact that the bacillus of Plotz (15) has been repudiated as the causal factor, the agglutination tests themselves are certainly not conclusive.

Aside from Kaliski's and Buerger's (6) work, numerous workers have carried out complement fixation tests and have found them negative in the great majority of true cases of thromboangiitis obliterans. In a series of one hundred cases observed by the author, complement fixation tests were negative in all but two where a definite history of preceding luetic infection was obtainable. Investigations of the formed elements of the blood have similarly given little information. A curious fact is that a great majority of these patients have a rather high red blood cell count, as well as a fairly high hemoglobin concentration. Willy Meyer (11) had a series of thirty-four cases in which the average red blood cell count was over five million, and the hemoglobin about ninety-five per cent. The red blood cells do not vary from the normal as far as microscopical examinations show. This does not seem to

agree with Willy Meyer's (11) theory of the effect of pyridine on the red blood cells.

The white blood cells seem to be affected by the agent responsible for this disease. In a series of fifty or more cases the average white blood cell count was about 11,000; the lymphocytes exceeded their normal count by about ten per cent. A definite increase in the eosinophiles was present in the great majority of cases examined. The reason for this is not as yet clear.

The chemical pathology of this disease has interested investigators in the past few years, and the results obtained have been quite interesting. Kahn (24), in an unpublished investigation on a series of six cases studied at the Beth Israel Hospital, found the calcium content of the blood definitely increased in all cases. Bernhard (25) studied thirty-six cases and found the blood normal as far as its cholesterol, calcium ,and chloride content were concerned. The sugar content showed a definite variation from normal. In addition the glucose tolerance test showed definite variations which permitted the classification of these cases into three groups.

The entire group studied have a blood glucose content varying between 96 and 210 milligrams of sugar without any sugar appearing in the urine. The average in the blood for this group is 115 milligrams to 100 c. c. After the administration of glucose (100 grams), the following variation appears: One group of cases showed a rise varying from 106 to 344 milligrams (the average for all cases being 179 milligrams). Of this group thirty-six per cent. showed sugar present in urine, although almost one fourth of this number had a blood sugar of less than 150 milligrams, showing that the renal threshold for sugar was impaired. Six cases had a blood sugar content of 180 milligrams or over without glycosuria and sixty-nine per cent. had 150 milligrams or more. The renal threshold in the majority of cases was, therefore, higher than normal, indicating the deficiency in elimination previously mentioned in connection with Willy Meyer's (11) theory of the effect of nicotine on the causation of this disease. Two hours after the ingestion of the 100 grams of glucose, the blood sugar content varied between 96 and 288 milligrams, giving an average of 146 milligrams. Only thirty-three per cent. of these cases showed glycosuria. The great majority of these cases show a glucose tolerance curve which differs from the true diabetic and is significant because of the early rise and comparatively early drop, and also because of the renal retention of sugar which is present. The increased blood sugar which many of these patients have is dependent upon an increased hydrogen ion concentration of the blood, which not only occurs in this disease, but is present in many infections where a change takes place in the normal hydrogen ion—hydroxyl ion ratio.

Studies with regard to the coagulation time of the blood have likewise shown a deviation from the normal. The studies carried out by the author will appear shortly in another paper. A large number of patients affected with this disease show a markedly accelerated coagulation time which apparently explains the tendency to thrombosis of the affected bloodvessels which is so important an element in the production of many of the symptoms of this disease.

A number of other researches have been made which bear on this subject, but were not carried out as a part of systematic researches on thromboangiitis obliterans. These will be discussed in connection with the various symptoms under pathological physiology.

Author's bibliography will appear in his reprints.

What the General Practitioner Should and Must Know About Hypertension

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Although blood pressure has been the subject of study and research since Harvey's discovery of the circulation of the blood in the middle of the seventeenth century, it is practically really only within the last decade that it has attained prominence from a practical viewpoint, in this country. This trend, however, had its beginning as far back as 1828, in Europe. Today its importance in the diagnosis, prognosis and treatment of disease is so great that its estimation is regarded as one of the essential factors in the general routine examination of every patient presenting himself with any constitutional ailment. And it is in this indirect way that deviations of the blood pressure from the normal are usually detected; or they may be brought to light during the progress of a compulsory examination prior to admission to an athletic contest or other physical strain, or following application for admission to college or camp life or, as it frequently happens, during a physical examination incident to the obtaining of a life insurance policy. In nearly every pathological condition there is a change of blood tension; in some cases it is influenced to rise above the normal limits, and in other cases the variation is in the reverse direction.

Blood pressure is dependent upon the following factors: the vasomotor system, the strength and energy of the heart, the elasticity of the vascular system, the volume of the circulating blood, and upon the peripheral resistance. Any element which disturbs the harmony of this system will, in turn, affect the blood pressure. The history of blood pressure determinations may be traced back to 1828, when Poiseuille introduced the first U tube manometer. But it was not until 1876 that a useful blood pressure apparatus was devised by Marey, by

means of which both systolic and diastolic blood pressure could be recorded. All modern sphygmomanometers, however, utilize the pneumatic principle of Riva-Rocci, who devised his instrument in 1896 employing a pneumatic constricting band. The essential difference in sphygmomanometers of today, as compared with that of Riva-Rocci, is the greater width of the cuff. This is now from twelve to fifteen cm. wide, the original narrower cuff being found to give to higher readings on account of loss of pressure in compressing the tissues. Theodore Janeway, in high tension cases, found a five cm. cuff to register as much as 60 mm. higher than a twelve cm. cuff. To estimate blood pressure accurately on instruments of the modern type, the usual procedure is as follows: The apparatus having been set up, the pneumatic cuff is adjusted snugly and without compression to either arm or thigh—usually the former. The cuff is then inflated until the pulse below the constriction is obliterated. Estimation of blood pressure is then made by either of two methods: the old, or palpation method; the new, or auscultation method. Systolic and diastolic pressure may be estimated by either method.

A determination of blood pressure in the past meant merely a reading of the systolic pressure, without any consideration of the diastolic or of the pulse pressure. This was largely due to the difficulty in obtaining reliable readings of the diastolic pressure. Pulse pressure being the difference bebetween the systolic and diastolic pressure, depended upon the correct estimation of both these factors. The significance of pulse pressure is, in the opinion of many observers, greater than either the systolic or diastolic, for the following reasons: Pulse pressure depends upon pulse rate. If the pulse is slowed, more time is allowed for the blood to run through the arterial system during systole. Diastolic pressure will be lowered and pulse pressure increased; the reverse is also true. A weak heart will not raise tension as rapidly as a strong one, and the interval between the end of each systole and the next will be shorter and the pulse pressure lower. In a stronger heart the interval between systoles is longer and there is a larger pulse pressure. During contraction of bloodvessels, the diastolic pressure will be found to remain high, giving a small pulse pressure, and vice versa. A low systolic pressure with a large pulse pressure, probably indicates dilated vessels and a strong heart; while a low systolic pressure with a slight pulse pressure indicates a weak heart, and perhaps some dilatation of the vessels.

Not only is pulse pressure important in determining whether the present condition of the patient is due to deficiencies in heart or arteries, but it also serves, during treatment, as an accurate indication of results being obtained.

On the whole, however, too much significance should not be attached to these factors to the exclusion of all others, for it is urgent that all widely diversified symptoms be given their just evaluation, and that they be regarded from a clinical standpoint; and, further, that a correlation of existing conditions be not neglected.

The fact that the employment of special apparatus in the estimation of blood pressure has, to a great extent, superseded the old methods of palpation is viewed with disfavor by many observers. By them, the fingers are still considered the most reliable and sensitive of instruments, for through them is obtained not only an intelligent appreciation of the pulse beat, but the knowledge of interpretation of the sensations acquired by experience in this form of observations.

The position of the patient is an influencing factor in a determination of pressure, systolic pressure being eight to ten mm. higher in the reclining than in the sitting position. About the same difference will be found between the sitting and the standing posture. The diastolic pressure also rises but relatively higher than the systolic, and pulse pressure is consequently increased. The pulse rate is also increased. For these reasons it is important to take subsequent readings of the same patient in the same position as during the initial procedure. These determinations are best made midway between meals.

Another fallacy, in addition to those referred to before, was the former belief that hypertension was a condition peculiar to old age. It has now been determined beyond a doubt that variations of blood pressure are present at all ages and in a great variety of conditions. In children, according to Melvin and Murray (1) the average systolic pressure is only slightly lower than in adults; the average diastolic level, on the other hand, is decidedly higher than in adults, according to these writers. By the tactile method the average systolic pressure was 105.7 in a large series of children, as compared with 108.7 in adults, while the range was 125-84 in the former and 132-92 in the latter. In children the relation of pulse pressure to systolic pressure was 1 to 3 and the diastolic 1 to 2, while in adults this relation was 1 to 2.7 and 1 to 1.6 respectively.

In regard to the variation as influenced by sex, Faber and James determined (2) that mean systolic pressure shows no significant differences between the sexes within the period ranging from four to sixteen years. Further, that mean diastolic and mean pulse pressure do show significant sexual differences. Standard deviations were in all cases greater for girls, indicating a normally greater variability in female children, particularly marked during adolescence.

The actual cause of hypertension is still obscure however, many factors are believed generally to be provocative agents. Excessive indulgence in stimulating foods and drinks, especially abundant use of proteids, overindulgence in exercise, mental strain or worry, the emotional factor, disturbances of the ductless glands, change of function such as exerted by the menopause, the rôle of certain poisons and infections including syphilis (3), the disturbance of salt metabolism, excessive drinking and even the influence of heredity are among the large number of factors held responsible.

The consensus of opinion of the usual cycle has recently been well expressed by Osborn (4): "The cause of hypertension in the average individual of the present day is excessive use of stimulating foods especially abundant use of proteids, these foods causing the circulation, after the immediate stimulating

ffects have passed off, to become depressed. This, epeated for several years, will finally, through al- ered blood supply to the ductless glands, bring about derangement of their normal function. The har- nony is broken and they are impaired. The endo- rine glands have a marked influence on the forma- ion of the blood, also blood pressure is greatly in- luenced by them. If these glands are not properly ourished, they will become deteriorated and their unction greatly impaired or lost altogether. If verstimulated by food products, continued over- ction will give rise to exhaustion and there will be legenerative changes with inactivity.

The metabolic and nutritive processes of all the rgans and tissues of the body depend upon the roper function of the ductless glands. These grad- ally undergo impairment as we grow older, as do ll tissues of the body. This impairment may be astened by improper and oversupply of these food roducts which, through their stimulating effect, roduce exhaustion of the glands. Hypersecretion omes about by an excessive form of poison or toxic naterial within the blood stream, and it is probable hat there is some relation between disturbances of nternal secretion and the vascular tonus."

It is regrettable that our judgment of etiological factors is necessarily hampered by the fact that most patients with hypertension are not seen by the physician until the patient has reached the age at which arteriosclerotic changes appear which are associated with the onset of old age. The frequent association of certain renal lesions, also, with hypertension, has led to the deduction that these lesions were the cause of hypertension. In fact, the question of the definite interrelation of hypertension, arteriosclerosis and certain forms of nephritis has been a much discussed one, to which the recent theory of Moschcowitz (5) is a valuable contribution. This writer believes that hypertension is an important—if not the most important—factor in producing the lesion of arteriosclerosis; that arteriosclerosis and arteriocapillary fibrosis of the kidney are one and the same lesion and are always associated, and that, therefore, hypertension is the most prominent cause of arteriocapillary fibrosis of the kidney. According to this theory, the arterial and renal lesions are not separate and distinct entities, bearing mutual relations to each other, but are simultaneous results of the same condition. This relationship is definitely opposed to the theories generally accepted, firstly, that hypertension is caused by renal injury or the group of injuries termed chronic interstitial nephritis; and, secondly, that whatever the cause of hypertension, the end result is either an arteriosclerosis of the terminal arteries, including those within the kidney, or a damage of the kidney parenchyma itself in variable proportions.

In the typical high tension case, the heart is found to be hypertrophied, there is high arterial tension and an increase in the amount of urine. A series of questions directed to the patient will reveal symptoms of disorder of the cerebral circulation, as indicated by a subjective feeling of nervousness, headache, possibly nosebleed, insomnia or attacks of dizziness, or even threatened aphasia and hemiplegia.

The early symptoms of hypertension are often an unhealthy appearance, loss of strength, and such disturbances of digestion as may be referred to a weakened condition. The urine may contain albumin only occasionally, so that for this as well as for the detection of variations in blood pressure it is essential to examining these patients repeatedly as well as thoroughly.

In addition to conditions already referred to as being associated with hypertension such as arteriosclerosis and nephritis and the like, the following may also be included: Uremia, apoplexy, cerebral thrombosis, fracture of the skull, intracranial hemorrhage, cerebral tumors, Jacksonian epilepsy, idiopathic epilepsy, angina pectoris, aortic regurgitation, impaired heart conditions, gout, lead poisoning, exophthalmic goitre, diseases of the eyes, obstetrical conditions, particularly at the end of pregnancy.

A systolic pressure of 150 or 160, with a diastolic pressure of 60 or 70 and, consequently, a pulse pressure of about 100, are not infrequent in patients with a gross lesion of the heart, according to Cowan and Ritchie (6), "in the lesser lesions, on the other hand, the systolic and pulse pressure may be within normal limits, such as 120, 40; 125, 35; 115, 20. As a rule, however, both figures are greater than normal: 155, 55; 150, 60; 135, 50."

From the numerous and varied conditions with which blood pressure is found associated, it at once becomes evident that treatment of hypertension cannot be undertaken without a complete understanding of the other conditions coincidently present.

It seems logical, therefore, that the regulation of diet will exert a beneficial influence on hypertension. It should be begun early and followed systematically. Avoidance of all foods which tend toward overstimulation is a valuable preventive measure as well as an efficient form of treatment for advanced cases. The salt and fluid intake are of great importance. It is also essential that elimination—preferably by the nondrug treatment—should receive the proper attention. Physical rest and complete relief from mental strain and worry, with full attention to physical hygiene generally, and abstinence from smoking, alcoholics, tea and coffee, will go a long way toward relieving tension. A systematic form of exercise, preferably in the open air, will be found of value in some cases, while selective baths, high frequency, the Nauheim treatment, venesection, and other treatments are indicated in others.

The point cannot be too greatly stressed that, in all cases, treatment must depend in great measure upon the correctness of the diagnosis. One should not be in a hurry to lower tension in all cases, for it must be borne in mind that in some cases it is compensatory.

The drug treatment is considered, on the whole, less satisfactory than the drugless treatment. Some writers believe that digitalis, when employed, should be accompanied or preceded by some eliminative. According to others, this drug may produce an elevation of blood pressure with consequent rupture of cerebral vessels. In my experience digitalis, judiciously given in hypertension with irregular heart acts well—and I am never afraid to give digitalis in my hypertension cases, when indicated. The nitrates, especially nitroglycerine, or, more recently, benzyl benzoate, have been employed in cases of hyperten-

sive heart disease. In hyperthyroidism, glandular therapy may be indicated; in rheumatic diathesis iodine preparations, either internally or externally, give relief in most cases. In gouty cases, atophan acts sometimes remarkably well. Iodide of potassium reduces the hypertension effectively oftentimes.

To sum up, suggestions to be offered for the relief of high blood pressure cases are legion, and in each instance must be greatly influenced by the accompanying conditions.

SUMMARY

Accuracy in the estimation of blood pressure, arrived at after frequent determinations over a long period preferably, followed by the proper evaluation of conditions leading to a correct diagnosis, together with the employment of restrictions of diet, proper hygienic measures—alone or combined with the administration of drugs, if indicated—make for a likelihood of the relief or cure of hypertension.

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Clinical Studies in Venous Thrombosis

Its Occurrence and Significance in the Course of Advanced Heart Failure

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The phenomenon of thrombosis is so frequent that it is hardly the scope of a single paper to enumerate even briefly the conditions where it may occur. This is especially true if one includes frankly bacterial thromboses, such as sinus thrombosis following purulent otitis or pampiniform plexus thrombosis following pelvic inflammation and pyelophlebitis, following appendiceal infections. Capillary thromboses perhaps occur even more frequently as manifested by various petechial and microscopic focal necroses in the various blood dyscrasias and in septic or toxic conditions. These bacterial and capillary thromboses are fairly well understood and will not be included in our present discussion.

There is, however, a group of venous thromboses involving the larger vein trunks apparently unassociated with bacterial infections—socalled bland thrombi—which are relatively rare. They are met with in chronic wasting diseases and cachectic conditions such as tuberculosis, cancer and chronic heart failure. The etiology of these thromboses is still under discussion. Virchow, Aschoff and their pupils explain these thromboses largely on a mechanical basis, giving as the chief factors, first, alterations in the composition of blood, secondly, alterations in the rate of blood flow (with stagnation), and thirdly, peculiarities in the vascular wall. These authors emphasize the valves in the veins, tortuosities, varicosities, causing eddying of the blood with socalled sandbar formation among other things as contributory factors in the formation of such thromboses. Other observers, notably Vaquez and Widal, in France, assert for bacterial infections with a phlebitis or endophlebitis, a most significant rôle in the causation of the thrombi. They emphasize the frequency with which bacteria may be demonstrated in such thrombi on postmortem examination and reject the assumption that bacteria only invade these areas in the preagonal and agonal stages. A survey of the literature convinces one that both mechanical as well as bacterial factors probably play important parts in the causation of bland thrombi, and that a combination of circumstances is perhaps a necessary prerequisite. There is indubitable published evidence in support of both the mechanical and the infectious theory of thrombus formation.

The nature of the thrombus has received considerable study. It is generally believed that they begin at first as platelet thrombi, to which are later added the other elements, leucocytes, fibrin and red cells, making up the whole thrombotic mass. In size they vary greatly according to the size of the vessel, the proximity of branches and the condition of circulation. They often attain a considerable size and usually flow in the direction of the blood stream. To the platelet thrombus there is soon attached a less firm portion, darker in color, consisting of fibrin enmeshing leucocytes and erythrocytes forming the body or tail of the thrombus. This process sometimes extends until the next open branch is reached, when a new platelet thrombus may form with a repetition of the process, so that one often sees long thrombi consisting of alternating small areas of platelet thrombus (white thrombus) with larger areas of red thrombus. Occasionally these thrombi undergo further changes. Becoming infiltrated with fibroblast, they may be converted into connective tissue and be indistinguishable from the scar tissue of the vascular wall to which they are firmly adherent. More rarely they become canalized and circulation may be reestablished through them. When portions of these thrombi become detached and are conveyed to the right heart they give rise to embolism in various organs especially the lung.

In chronic heart failure such thromboses occur without any significant evidence of bacterial infection. They may, therefore, be classified as belonging to the group of bland thrombi. Considering the great frequency of heart failure, thromboses may be said to be rather rare. They involve the lower ex-

tremities—saphenous or popliteal veins as well as the upper extremities and the sinuses of the dura mater do not escape. When they occur they usually aggravate considerably the condition of the patient and are almost invariably of grave prognostic significance.

To illustrate the gravity of this complication in heartfailure the following case histories will be summarized.

Case I.—Mrs. L. B., aged fifty-six years, Russian Hebrew, with a negative family history and irrelevant previous history, came under observation in September 1917. For about a year previously she had shortness of breath on walking up stairs, a sense of discomfort over the precordium and palpitation. Three days before she was seen she became very dyspneic, and coughed a great deal after a walk of about half a mile. Examination showed a fairly well developed, well nourished female who looked ill and anxious. The heart was enlarged downward and to the left. The apex beat was diffuse and in the sixth interspace there was a systolic rough murmur over the whole precordium, especially loud over the apex and aortic areas. The second aortic sound was accentuated. While listening to the apex a premature contraction was occasionally heard. The lungs showed stasis at both bases with some consolidation at the right base posteriorly. The liver was palpable and somewhat tender. There was clubbing of the fingers and toes. There was no edema or ascites. The pulse was 100 at the apex and 93 at the wrist. The temperature was 101° F., respiration 30 a minute, blood pressure 175 systolic, 95 diastolic, both arms. The urine showed a moderate amount of albumin and a few hyalin and granular casts. Phenolsulphonephthalein output was 45 per cent. in two hours. The patient improved rapidly on digitalis medication and rest so that she felt well enough to be up and about in ten days. She remained fairly comfortable for the ensuing three and a half months.

Early in January 1918 evidence of decompensation again became manifest. This time there was more fever (102.5° F) and there was also hemoptysis. There was definite evidence of heartfailure with pulmonary stasis. She improved considerably after two weeks in bed and for the following two months she was able to be up and about most of the time.

In March she had to take to bed again because of shortness of breath and edema of the ankles. Her liver this time was at the level of the umbilicus and pulsating. She was suffering from a marked degree of auricular fibrillation (absolute irregularity) and a pulse deficit of 15 (apex 115, radial 100). Soon thereafter her dyspnea became more marked and she developed moderate cyanosis. At this time, because of a distinct murmur over the tricuspid area with pulsating jugulars and liver, a diagnosis of tricuspid insufficiency was made. Toward the end of March she began to complain of pain in the left lower extremity, which was tender along the course of the veins, popliteal and saphenous. On March 28th it was noticed that the left leg and thigh were very much more swollen and harder than the right, the circumference of the calf and thigh on the left side being about double that of the right. The edema gradually extended upward involving the lower abdomen and back after about a week from the onset. The temperature did not vary much from the preceding course, being rather irregular and varying between 98 and 100 8/10. The pain and tenderness, however, were distressing. There was no leucocytosis.

About April 10th the right upper extremity became tender and on the next day it became edematous. The tenderness was especially marked over the course of the veins and the edema was tense, beginning in the forearm, lower arm and gradually extending toward the axilla. Her condition remained stationary until about May 18th, when pain, tenderness and edema of the left upper extremity developed. A definite mass of veins could be made out in the supraclavicular space. They felt like a varicocele and were very tender. From now on the clinical course was progressively downward. She became drowsy, more cyanotic and ascites, stasis pneumonia and a decubitus ulcer developed.

On June 18th she was observed to have a double exophthalmos with some rigidity of the neck. This was thought to be due to sinus thrombosis of the dura. Her eye grounds could not be examined because of double cataract. The cerebrospinal fluid was under pressure, but otherwise negative.

She died June 23, 1918, three months after the onset of venous thrombosis.

Case III.—F. K., Hospital No. 37317, female, aged twenty-eight years, was admitted April 19, 1922, complaining of dyspnea, cough and swelling of ankles, of five weeks' duration. Her family history as well as past history was irrelevant, except for a nonproductive cough some three months prior to admission. She had one pregnancy and her child, who is nine months of age, is well. During her pregnancy she had swelling of the left lower extremity which disappeared after the birth of her child.

Examination revealed an acutely ill woman, flushed and somewhat cyanotic. Her teeth showed some caries. There was dullness over both bases posteriorly. Sibilant and sonorous râles were present over both lungs. The heart was enlarged to the right. The first sound was of poor muscular quality with an indefinite murmur at the apex. The liver was palpable but not pulsating. She had a temperature of 101° and her pulse was rapid. Her legs were not swollen.

The blood count was normal. The urine showed a moderate number of pus cells and a few hyaline and granular casts. The phthalein output was ten per cent. in two hours. The blood chemistry was normal. A diagnosis of influenza was made and she was treated accordingly.

After several days' rest in bed with moderate doses of digitalis she improved slowly, so that after a month's stay in the hospital she was afebrile, felt well, had no shortness of breath or cough. She was discharged May 17, 1922, greatly improved.

She was readmitted on May 22, 1922, because of the reappearance of her symptoms twenty-four hours previously. On her second admission she was restless, dyspneic and cyanotic. The heart sounds were of poor muscular quality, rapid and an occasional premature contraction could be heard over the pre-

cordium. A loud systolic murmur was heard over the apex and it was transmitted to the axilla. The pulse was small, thready, of poor quality, with a deficit of ten at the radial. The lungs showed some evidence of stasis. The liver was palpable but not pulsating and there was moderate edema of both ankles.

Three days after admission her condition appeared to be somewhat improved. There was less dyspnea, her pulse was better and her color was not as bad as on admission. She soon relapsed, however, and developed repeated attacks of extreme heart failure with marked cyanosis, extreme dyspnea, poor and rapid pulse and signs of impending dissolution. These attacks would last anywheres from one to several hours.

About July 5th pain and tenderness developed in her left lower extremity. Edema of the same extremity appeared two days later and extended up to the middle of the thigh. This edema remained more or less stationary. About July 31st suddenly there developed pain in the right chest and a severe cough. Signs of consolidation were elicited several days afterward. With this her temperature rose to 104° and fluctuated between 104 and 99 for the ensuing period of her stay in the hospital. The blood examination showed hemoglobin 99 per cent., red blood cells 4,500,000, white blood cells 14,200 with 84 per cent. polymorphonuclears and 16 per cent. lymphocytes. The urine showed hyaline and granular casts. The blood pressure was low throughout, 86 to 90 systolic and 70 diastolic (low pulse pressure). Her Wassermann was negative. She died August 15, 1922, in one of her attacks of tachycardia and cyanosis. Death occurred a little less than six weeks after the onset of venous thrombosis in her left leg.

COMMENT

From a perusal of the literature one is inclined to believe that thrombosis is an infrequent complication of heart failure. Bouchut (1) reported it in 1845. Baldwin (2) in 1897 called attention to it in this country and reported one case out of thirty-four as occurring in heartfailure. Welch (3) in his extensive studies of thrombosis and embolism, reports five cases of his own and twenty-three cases from the literature. Blumer (4) reports one case out of four as due to heart disease. Poynton (5) reported three well studied cases associated with rheumatic heart disease. Futcher (6) reports a case similar to Case IV herein reported.[1] His case subsequently developed embolism of a large artery. Brannan (7) reported a case also similar to Case IV except that in his case the thrombosis occurred in the right side. Huchard (8) and White (9) also describe the condition as occurring in heart failure.

More recently, however, Sladen and Winternitz (10) reviewed the subject rather comprehensively up to 1915 and report seventeen cases of their own (the largest series up to date by one set of observers). These authors emphasize the fact that thrombosis in heart failure may be overlooked frequently because of the already existing edema. With this view my observations fully agree. Unless looked for carefully by comparing the two limbs and palpating along the course of the large veins where tenderness may almost invariably be elicited, the condition is often missed.

The gravity of this complication has been stressed by most of the authors writing on the subject. The case histories in this article cannot fail to impress the reader with the seriousness of this complication. All of my patients died within a comparatively short time after the first appearance of venous thrombosis. Whether the thrombosis *per se* hastens death or whether it merely is an expression of the gravity of the condition I am not prepared to say. In Case I the development of sinus thrombosis and in Case III the development of probably embolic pneumonia most likely shortened life.

It is generally believed that in heart failure thrombosis of the upper extremity is more frequent than that of the lower extremity. In this small series of cases the incidence of upper and lower extremity involvement is about equal. The prognosis is equally bad whether upper or lower extremity is involved or both. The number of extremities or rather extent of involvement appears not to influence the outlook. According to Sladen and Winternitz the mortality is about eighty-three per cent. The frequency with which embolism may occur is a subject worth while studying. The idea suggests itself that perhaps many of the socalled stasis pneumonias may be embolic from an unobserved venous thrombosis. This condition may be also mistaken for cardiac thrombosis when emboli occur in the peripheral vessels without the presence of bacterial endocarditis, for a potent foramen ovale is not as rare as is usually believed.

The treatment of this condition is at present unsatisfactory. The primary heart disease should of course be treated thoroughly. The question of passive motion and massage to the extremities before the onset of thrombosis should be considered in all cases of heart failure.

CONCLUSIONS

From a study of these cases it may be stated that

1. Venous thrombosis not infrequently occurs as a result of chronic heart failure and it may be overlooked because of the associated edema.

2. The site of such thromboses may be either in the vessels of the extremities or sinuses of the brain and perhaps in the deep veins of the thorax and abdomen.

3. When such thrombosis occurs it renders the prognosis extremely grave.

4. It is possible that passive motion of the extremities together with massage may be indicated in some cases of chronic heart failure.

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[1]Due to lack of space two of the author's cases were omitted.

Local Anesthesia for Dental, Oral, Nose and Throat Surgeons

*Fourth Article**

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(*Concluded from page 223*)

LOCAL ANESTHESIA FOR TONSILLECTOMY

The tonsillar area is innervated by branches from Meckel's ganglion, by the faucal branch of the lingual and by branches from the pharyngeal plexus which form, on the tonsil, the tonsillar plexus. Meckel's ganglion may be anesthetized by one of the regional or conduction methods already described but the other nerves must be anesthetized by practically infiltration methods.

The pharnygeal plexus lies just under the aponeurosis on the belly of the superior constrictor muscle, its branches rise and enter the tonsil with the aponeurosis or as it is called, the capsule. So it will be seen that to anesthetize the tonsil the solution must be injected near the pedicle and just beneath the aponeurosis or in other words, between the superior constrictor muscle and the aponeurosis near the pedicle. The principal branches from the pharyngeal plexus rise directly to the pedicle, some minor branches rise higher then turn and drop to the pedicle, the branch from the lingual also drops to the pedicle. Thus it will be seen that solution must be deposited both above and below the pedicle.

The needle used is twenty-five mm. in length and of twenty-one gauge. This large gauge is used to enable the operator to direct the needle without fear of bending and thus lose direction. The needle is entered into and through the anterior pillar at a point where it will pass between the aponeurosis and the superior constrictor muscle about three mm. above the pedicle. The needle is advanced until its point is just about on a line with the posterior border of the posterior pillar and under the body of the pillar. On passing the needle into the tissue and also during its withdrawal, one mil of one per cent. solution of procaine, containing suprarenal extract in the proportion of one to 50,000, is injected. This injection is duplicated at a point beneath the pedicle and in the same relation to the parts.

While making these injections the needle must at all times be directed toward the median line. It never should be allowed to pierce and go through the superior constrictor muscle for the reason that external to that muscle considerable danger lies and because the nerves to be anesthetized lie just beneath the mucous membrane.

FOR OPERATIONS ON THE TONGUE

The anterior two thirds of the tongue or that portion anterior to the circumvallate papillæ is innervated by the lingual nerve. The posterior third or that portion of the tongue back of and under the papillæ is innervated by the glossopharyngeal.

Anesthesia of the lingual nerve is readily produced by regional or conduction methods according to the technic described under the injection at the inferior dental foramen, advancing the needle to the position of the lingual nerve only. It must be remembered that the lingual nerve lies about five to six mm. under the tissue, close to the internal oblique line. To produce anesthesia of the lingual nerve, about one mil of one per cent. procaine solution is injected, at the site indicated. The resulting anesthesia involves the area to which the branches of the lingual nerve distribute, namely, the anterior two thirds of the tongue proper, by the lingual and a portion of the sublingual branches; the mucous membrane of the floor of the mouth, the alveolus and the sublingual area, by the sublingual branch; and, that area to the side, back of and slightly above the tongue, in the region of the tonsil, as innervated by the faucal branch of the lingual.

The posterior portion of the tongue, from the circumvallate papillæ to its root, must be anesthetized by infiltration for the reason that there is no single place at which to inject any of the lingual branches of the glossopharyngeal. The lingual ramifications of the superior laryngeal may be anesthetized by regional methods (as set forth below) but since infiltration is necessary for the lingual branches of the glossopharyngeal, it does not seem wise to use the regional method. Again, it is extremely difficult to delineate, with any accuracy, the extent of the area of anesthesia produced by the injection of the trunk of the lingual branch of the superior laryngeal and, further, the ramifications of the terminal branches of each overlap.

REGIONAL ANESTHESIA OF THE SUPERIOR LARYNGEAL

It is desirable in many cases to operate on the larynx without the topical application of an anesthetic drug which must be applied in high percentages. In tubercular laryngeal cases, it may be thought well to make alcoholic injections, the technic of which is exactly the same as for the production of regional anesthesia. In operations on the larynx, from the outside, and in other operations on the throat, regional anesthesia is especially desirable because of the smaller amount of anesthetic solution required and because of the greater area of anesthesia produced.

That a clear mental picture may be had, let us review the course of the superior laryngeal through its safely and easily accessible area. The accompanying picture may help to recall the position of this nerve. These pictures are old, so, too, is the terminology, but I know of no work which pictures the area so well. These pictures are taken from *Weisse's Practical Anatomy* (1899).

It is seen that the superior laryngeal passes close to the greater cornu of the hyoid, extending downward, forward and outward for about ten mm. to a point about midway between the hyoid bone and the thyroid cartilage where it enters the thyrohyoid

*The first article in the series was published in our issue for October 19, 1921; the second in February 1, 1922, and the third in March 1, 1922.

membrane. Immediately after entering the membrane, it divides into the internal laryngeal which is the source of sensation of the larynx the external laryngeal whose function is to supply some sensory but mostly motor impluses to the cricothyroid muscle; and the communicating branch which passes downward and joins the recurrent laryngeal, which, according to Allen, "is distributed to all muscles except the cricothyroid and supplies sensation to all parts below the vocal cords."

Thus it would seem that injection of anesthetic solution at the accessible part of the trunk of the superior laryngeal would produce anesthesia in the base of the tongue, the larynx and surrounding hyoid and thyroid muscles, but not the skin and the platysma.

In his *Local and Regional Anesthesia* (1914), Dr. C. W. Allen says:

"To reach this nerve for regional infiltration have the patient lie on his back, with a small pillow under the back of his neck; have an assistant, by pressure on the opposite side, displace the hyoid bone from one side, rendering it more prominent; with an index finger on the great cornu, the needle is passed down in this direction and two or three c. c. of 0.5 per cent. procaine with one drop of adrenalin (one to 1,000) is injected into the thyrohyoid membrane, a little below and in front ,about one half inch) of the great cornu; the opposite side is treated the same way; the anesthesia appears in from five to ten minutes and frequently lasts one hour or longer, and is sufficient for all operations above the vocal cords.

The method described above is perfectly clear—to the man who has performed the injection several times. It is not sufficiently clear to enable the neophyte to accomplish the work. The writer has sought and found two landmarks which may enable the operator to work more intelligently.

The patient is placed on his back with a rest under the neck so that the head is thrown well back, thus exposing the full neck.

The larynx is displaced to one side. On the now more prominent side, the greater cornu of the hyoid bone is palpated; the highest point of the curvature of the ala of the thyroid is also palpated, this latter point is from five to ten mm. posterior to the upper angle of the notch of the cartilage and on its upper border. An imaginary, or if necessary, an actual line is drawn between the two points palpated.

At a point about one third of the length of the line, from its anterior end, the needle is inserted into the tissue in a median direction. The needle is advanced until it shall have pierced the platysma muscle and the overlying and underlying fatty tissue. In the average case the distance is approximately five mm. The body of the syringe is now swung to the front into such a position that the needle will be parallel with the line drawn and the point of the needle—if it were advanced sufficiently far—would pierce the greater cornu of the hyoid. In other words, the needle is directed straight for the greater cornu of the hyoid. The needle is advanced in the direction given for a distance of approximately ten mm, or to such an extent that the point of the needle is about five mm. from the greater cornu. While making this advance the needle pierces the various hyoid and thyroid muscles encountered and when the advance has been completed, the needle lies in the space between the muscles and the thyrohyoid membrane. The presence of the needle in this space is determined by releasing the larynx. The needle is felt to be in a socalled empty space.

At this point one to one and a half mils of one per cent. procaine solution is injected, slowly. During the progress of the needle to this location approximately one half mil of solution has been injected just ahead of the needle to make its advance painless.

The needle follows closely the course of the laryngeal branch of the superior laryngeal, in a reverse direction of course, back to and beyond the point at which the trunk splits into its various branches. It is evident that injection of the larger amount of solution before the needle has reached the specified point will not produce the desired anesthesia because of the fact that the trunk of the nerve enters the thyrohyoid membrane at approximately the end of the ten mm. advance. Deposition of solution outside of the membrane or before the trunk has been reached may produce some anesthesia but the desired depth and extent will not and cannot be produced unless the solution be deposited along the course of the trunk itself and within no greater distance than five mm. from the trunk.

Care must be taken that the needle does not enter nor pierce the thyrohyoid membrane. Between the membrane and the interior of the larynx lies only a thin layer of connective tissue, through which travels the blood and nerve supply, and the mucous membrane. It is evident that by allowing the needle to pierce the membrane, it very easily enters the interior of the larynx and while this is not especially dangerous, it is not exactly desirable.

Care must be taken, too, that the patient shall not swallow during the insertion of the needle.

The anesthesia resulting from this injection will cover all of that area to which the various branches of the superior laryngeal are distributed and will present in from five to fifteen minutes.

Accidents.—The thyrohyoid membrane may be punctured. Proper directional placing of the needle will obviate this. The internal laryngeal artery or vein may be punctured. If a needle of large gauge, with its point ground at an angle of 45°, is used little danger of such an accident presents.

The use of old, discolored or nonisotonic solutions will be followed by soreness, sloughing, fainting, shock or collapse.

Infection and dangerous abscesses will follow the use of unclean instruments or solutions.

CONCLUDING REMARKS

In certain areas conditions may exist which prohibit the use of the injections described; in fact, the use of local anesthesia may be proscribed. In those cases, particularly in the dental areas, certain socalled extraoral injections may be made; in my opinion it is better to use general narcosis.

The surgeon, when making injections for local anesthesia, is to remember that all injections into bony areas *must* be made slowly; injections into soft areas *may* be made quickly. General safety, freedom from shock, fainting or collapse demand that *all* injections in any area be made slowly.

Practical Therapeutics

CLINICAL EXPERIENCES WITH DESICCATED SPLEEN AND RED BONE MARROW IN THE TREATMENT OF ANEMIA

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In a preliminary clinical report, Leake and Evans (1) state that desiccated spleen and red bone marrow, combined in equal proportions by weight, and administered in five grain (0.3 gram) amounts in capsules three times daily, has been found beneficial in certain types of anemia. These were listed in the order in which greatest improvement was noted, as follows:

1. Grave chronic secondary anemias of undetermined origin, having many of the characteristics of the progressive pernicious type (high color index, abnormal forms of erythrocytes, marked pallor, dyspnea, and cardiac disturbances), and in which iron and arsenic, and in some cases transfusions, had failed to bring about a favorable response.
2. Grave active secondary anemias of acute septic infections.
3. Chronic anemias found as an accompaniment of chronic infections.
4. Dietary anemias of infants, in which if the patient is too small to take capsules, the preparation is administered in boiled and filtered aqueous solution as a broth.
5. Menorrhagic anemias.
6. Mild chloroanemias of adults.

The preparation was not found beneficial in pernicious anemia. These clinical observations followed the experimental reports previously made by Leake (2), in which it was claimed that desiccated spleen and red bone marrow, administered as noted above, were efficient erythropoietic agents in normal humans, and more powerful as such, in combination, than when used singly.

It is to be realized at once that this type of treatment of anemia is only symptomatic, and while it may be of great value in improving the patient's general condition, it does not constitute in any sense a cure for anemia, unless it contributes to the discovery and removal of the cause.

One must approach the question of the symptomatic treatment of anemia with extreme skepticism, in view of the long clinical experience with arsenic and iron and the present disagreement as to their value in this condition, and in light of the many factors which may contribute to a spontaneous remission unrelated to any form of treatment. Furthermore, the most careful technical work reveals that wide fluctuations of the erythrocytes and hemoglobin content are encountered even in normal and healthy individuals, so that the limits of definite change must be placed at least at plus or minus five per cent. with the most careful technic, with the determinations made at the same hour daily, and with no marked variations in diet or fluid intake. In the exercise of clinical judgment, in the case of the anemias, the physician has few objective standards that are capable of more than gradual change. One must be extremely cautious, therefore, in delivering a clinical opinion before several weeks have elapsed after symptomatic treatment has been instituted.

Keeping in mind the necessity for observing this skeptical point of view, however, it may be stated at once that the fair conclusions to be drawn from the cases reported below, are, a, that the administration of combined desiccated spleen and red bone marrow offers greater promise of success in the symptomatic treatment of secondary anemia than the administration of iron or arsenic; b, that this preparation would seem to cause a more rapid improvement in the blood picture in secondary anemia than any other agency except transfusion, and c, that it is of no value in pernicious anemia except as a diagnostic aid.

SUMMARY OF CASES

The cases listed here are unselected, and are such as may occur in the general practice of a physician in a medium sized city. The blood counting was done by experienced technicians, using standard methods. The hemoglobin content was estimated by the Dare instrument.

The criteria used as a basis for judging improvement in a case were, a, an alteration in the blood picture for the better; b, a gain in weight, and c, an improved clinical condition. The blood picture was considered "moderately improved" if the erythrocytes increased over 500,000, and if the hemoglobin percentage rose more than ten points.

The total number of patients studied was thirty-two, of whom three showed absolutely no improvement, five gave evidence of slight or questionable betterment, eleven were moderately improved, and thirteen were considerably or markedly helped.

Of the three cases not benefited, one was diagnosed as pernicious anemia, one was a case of inoperable cancer, and the third was shown at the autopsy conducted by Dr. C. H. Bunting to be an example of acute myeloblastic leucemia. Three of the five cases in which improvement was slight or doubtful were senile anemias in women beyond the sixth decade, while one was an anemia secondary to advanced pulmonary tuberculosis, and the fifth was an anemia secondary to severe chronic arthritis of eight years' duration.

Six of the eleven patients who were moderately improved after treatment with spleen marrow compound had long persisting anemias secondary to chronic arthritis, and were women in the fifth or sixth decades. The anemias in these cases had resisted long continued use of iron and arsenic administered separately and combined by different routes. Three of the eleven in this group were cases of chronic anemias secondary to some unknown cause, in whom again, iron and arsenic administered in a variety of forms had been of no value. Of the remaining two cases in the eleven of this group moderately benefited, one was an anemia secondary to empyema, and the other was a severe anemia secondary to dietary irregularities in a young infant.

Of the thirteen anemic patients considerably improved under treatment with combined desiccated

spleen and red bone marrow, four were cases of severe anemias secondary to postpartum hemorrhage, in whom recovery was much more prompt and marked than I had noted in similar cases in whom other forms of treatment (transfusion excepted) had been employed. Three women in this group of thirteen suffered from menorrhagic anemias or anemias secondary to some unknown cause probably associated with disturbed menstrual or sexual function. Two infants (one four months old, the other six) were considerably and apparently permanently improved by a two weeks' period of daily administration of a saline broth made from the spleen marrow mixture. In both these infants, previous attempts to improve the anemic condition by dietary regulation and by other methods, had failed. Two cases of moderately severe anemias in women secondary to some unknown etiological factor, were greately benefited by spleen marrow therapy, after intramuscular injections of iron and arsenic during a period of several months had been without avail. A severe anemia secondary to convalescence in typhoid fever improved remarkably and rapidly under treatment with spleen and bone marrow. When this was suspended, a relapse in the anemic condition was noted, but this was quickly overcome by resumption of the spleen marrow therapy. In this case, intramuscular injections of iron and arsenic failed to take the place of the spleen and marrow combination when the latter was withheld. The final case included in this group of greatly improved anemic patients was diagnosed as chlorosis, although the decreasing incidence of this condition warrants caution in making such a diagnosis. This case, and a few others in this group, may be briefly summarized for the purpose of illustrating the type of response noted to spleen marrow therapy in anemia conditions.

Case I.—A sixteen year old girl, of Scandinavian descent, was sent in from the country to live with relatives in the city, while attending high school. On January 28, 1924, she appeared for consultation, complaining of headache, nervousness, and fatigue. She was pale, volunteered the fact that she felt lonely, and she was found to be underweight. Physical examination revealed nothing significant. Her blood count was: red blood cells, 3,900,000; white blood cells, 8,800; hemoglobin, 35 per cent.

Three five grain capsules of combined desiccated spleen and red bone marrow were given daily. On February 12, 1924, her blood picture was: red blood cells, 4,400,000; white blood cells, 7,600; hemoglobin, 55 per cent. The spleen marrow mixture was reduced to two capsules daily, and she was sent home for a week's vacation in the country. On February 23, 1924, her blood count was: red blood cells, 4,600,000; white blood cells, 7,300; hemoglobin, 78 per cent. The administration of spleen marrow was reduced to one capsule daily. She was last seen March 1, 1924, when her general physical condition seemed better; a gain in weight of thirteen pounds was noted, and her blood picture was found to be: red blood cells, 4,800,000; white blood cells, 7,600; hemoglobin, 85 per cent.

Case II.—An unmarried woman, aged twenty-five, was employed in a tobacco warehouse. She was first seen March 27, 1924, when she complained of a gradual loss of weight, a constant tired feeling, a loss of appetite, a slight but persistent cough, and frequent headaches. Physical examination revealed nothing significant, and a microscopic examination of her sputum was negative. Her blood count was: red blood cells, 2,800,000; white blood cells, 6,600; hemoglobin, 55 per cent. Three capsules of the spleen marrow compound were given daily. On April 11, 1924, her blood picture was: red blood cells, 3,920,000; hemoglobin, 75 per cent. The administration of spleen marrow was reduced to one capsule daily, and the patient was last seen on May 1, 1924, when a gain in weight of seven pounds was noted, and the blood count was found to be: red blood cells, 4,200,000; white blood cells, 7,500; hemoglobin, 83 per cent. The patient stated that her subjective symptoms had disappeared.

Case III.—A married woman, aged forty-seven, had undergone the menopause. She had been under observation during the summer of 1923, having had three severe hemorrhages in four months. On October 16, 1923, her blood picture was: red blood cells, 3,100,000; hemoglobin, 53 per cent. She complained of physical weakness and nervousness. During the following four months she received intramuscular injections of iron and arsenic regularly, together with Blaud's pills by mouth. Her final administration of iron and arsenic was February 9, 1924, when her blood picture was: red blood cells, 3,300,000; hemoglobin, 55 per cent.

On March 18, 1924, she was put upon spleen marrow treatment alone, three five grain capsules daily, and her blood count during the next week showed the following changes:

DATE	ERYTHROCYTES	HEMOGLOBIN
March 18, 1924.....	3,200,000	52 per cent.
March 20, 1924.....	3,800,000	47 per cent.
March 22, 1924.....	3,960,000	55 per cent.
March 25, 1924.....	4,010,000	60 per cent.

The administration of the spleen marrow mixture was reduced to two capsules daily. On April 15, 1924, the blood picture was: red blood cells, 4,600,000; hemoglobin, 80 per cent. The administration of the combined desiccated spleen and red bone marrow was reduced to one capsule daily, and the patient has not been seen since.

Case IV.—A married woman, aged thirty-five, was first seen on April 26, 1924. She complained of loss of weight, fatigue, loss of appetite, and an almost complete cessation of menstruation. Physical examination revealed nothing significant. Her blood count was: red blood cells, 3,200,000; hemoglobin, 60 per cent. After two weeks' treatment with spleen marrow mixture (three five grain capsules daily) her blood count was: red blood cells, 4,100,000; hemoglobin, 82 per cent. The spleen marrow compound was reduced to one five grain capsule daily, and the patient was last seen June 21, 1924, when she reported that normal menstruation had returned and that she no longer became fatigued as easily as formerly. A gain in weight of six pounds was noted and her blood picture was: red blood cells, 4,600,000; hemoglobin, 88 per cent.

COMMENT

It is evident from this small series of cases that spleen marrow therapy as a form of symptomatic

treatment is valuable in the general run of secondary anemias commonly found in ordinary practice. It is of no service in pernicious anemia, unless, as Leake and Evans suggest, it may aid in diagnosis. It has likewise no value apparently in other severe pathological involvements of the hemopoietic system, as illustrated by my failure to get beneficial results in the case of myeloblastic leucemia.

The observations made experimentally by Leake indicate that spleen marrow compound stimulates red cell production in normal humans. The slower rise of the hemoglobin as compared with the number of erythrocytes, under this form of therapy, suggests that some attention should be paid to diet in the effort to furnish material for the formation of new hemoglobin. As indicated by the studies of Whipple and Robscheit (3), this may be accomplished by a mixed diet, with special reference to green vegetables, egg yolks, and meat.

SUMMARY

Desiccated spleen and red bone marrow, combined in equal proportions by weight, and administered in five grain (0.3 gram) capsules, three times daily, constitutes a valuable addition to the armentarium of the physician in the symptomatic treatment of secondary anemia. This form of therapy is more efficient, more rapid in action, and safer than the traditional treatment with iron and arsenic. It is, however, of no service in pernicious anemia. These conclusions are based on a series of thirty-two unselected cases of anemia, observations on which confirm the preliminary report made by Leake and Evans with respect to this form of therapy.

NOTE: I wish to thank the Wilson Laboratories for supplying satisfactory material for use.

The cases included for discussion in this paper do not include six cases studied before January 1, 1924, the observations on which were used by Dr. C. D. Leake and Dr. J. S. Evans for incorporation in a detailed report to appear in the *American Journal of the Medical Sciences.*

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FLUID EXTRACT OF CONDURANGO

Its Use in Uterine Hemorrhage, Menorrhagia, Metrorrhagia, and in the Menopause

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Condurango is described as the bark of the Gonolobus condurango, a vine grown in South America. It contains a yellow resin, tannin and two glucosides.

Preparations and dose.—Fluid extract of condurango, dose one fluid dram; wine, dose four fluid drams; decoction, four fluid drams.

Therapeutics.—Condurango was first used in gastric carcinoma and ulcer. It is now known that it has no effect on these diseases, but does allay pain.

A few years ago, on account of the high price of fluid extract of hydrastis and my inability to get the brilliant results from the drug in proportion to the price, my attention was called to the fact that fluid extract of condurango was being used as a stomachic tonic. While I had great need of a stomachic, I had greater need of a drug checking uterine hemorrhages of all kinds. So I proceeded to test it along the same line as hydrastis is used for conditions such as hemorrhage due to fibroids, menorrhagia in the menopause, metrorrhagia, uterine hemorrhages of unknown origin, and hemorrhages caused by cancer of the uterus.

After about eight years' experience with the use of this drug, I find that fluid extract of condurango, given in twenty minim doses every two hours until the required effect is obtained, then less often, is excellent and superior to any other drugs that are used in these conditions.

I consider it a specific in uterine hemorrhage after miscarriage or abortion, in hemorrhage during menopause, in metrorrhagia, menorrhagia, in postoperative hemorrhage, when the bleeding is prolonged after labor, or in any chronic or subacute hemorrhage from the uterus. In short, condurango is indicated wherever the use of hydrastis is advised.

Bleeding from the uterus caused by fibroids can be controlled by condurango longer than by any other drug, and it will act with more dispatch. In cases of old fibroids with bleeding that has gone so long that one despairs to operate on account of loss of blood and weakness, I assert that this drug will control the hemorrhage, tone up the stomach, and always produce a condition more favorable for operation. It causes no pain or discomfort in its action upon the uterus. It does not upset the stomach and is a good alterative.

In cancer of the uterus, it will control bleeding more quickly than any other known drug and its effect is more lasting. I use it exclusively in inoperable cancers of the uterus.

Fluid extract of condurango is nonpoisonous in medicinal doses and its effect is not cumulative. The only strange effect I have ever had from the use of the drug is as follows: In trying to make sure that, in excessive menstruation or bimonthly menstruation, a correct and lasting effect was obtained, the drug was given a good while after bleeding ceased, and the patient skipped the next regular time for her period, but with no ill effects.

I have called attention to the use of this drug to a number of my fellow practitioners who have reported on it favorably.

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The Use of Salicylates per Rectum.—George R. Irving (*Archives of Pediatrics,* December, 1923) asserts that salicylate in the form of sodium salicylate may be conveniently administered per rectum. The rectal administration may be considered safe in the hands of an attendant with ordinary intelligence or without special training. Relatively large doses may be given once or twice daily—twenty to one hundred grains. By this method of administration, the stomach is particularly free of irritation. In case of untoward effect, the administration of a simple enema will remove the unabsorbed material.

Historical Medicine

The Poet Keats

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Of the English speaking poets none is more of a natural singer than John Keats, one of the glories of English literature. But it is superfluous to dilate on Keats the poet to cultured readers and it will be the object in this essay to give some of the meagre details of his career as a medical student. It may be said that Keats became a member of the medical profession, as he was a surgical student at Guy's Hospital, passed his examination, and was admitted a member of the Society of Apothecaries on July 26, 1816, and, moreover, it is known from various sources that he passed with credit. It has been denied that Keats ever qualified and even the views of many are hazy on this point, but as a matter of fact in his days the license of the Society of Apothecaries was often the only qualification with which the ordinary medical man practised. There was no law in those days requiring a practitioner to have two qualifications as there is now. It may then be taken as proved that Keats qualified regularly but never practised. He is described as a loose, slack, not well dressed youth, with large and lustrous eyes, and hair of golden brown. He was small in stature and his fellow dressers called him "Tiny Keats."

He was born in 1795, the son of a stable keeper, and was a seven months, weakly, puny child, with a constitutional tendency towards pulmonary tuberculosis. When his mother died he came into a legacy of £2,000. From the medical viewpoint the history of Keats begins with his indenture to a surgeon at Edmonton, a suburb of London, to whom the vast majority of would be medical men were apprenticed at that time. He stayed at Edmonton for two years when his articles were cancelled probably on account of a disagreement between the surgeon Matthews and his pupil. The life of a doctor's apprentice was a hard one, and it seems likely that Keats, highly sensitive and impulsive, did not take kindly to the life. It may be recalled that George Crabbe, the poet, was also apprentice to a surgeon in his boyhood and in that capacity was forced to sleep in a barn and run on errands for his master, from whom he learned little medicine and less anatomy.

When at Edmonton Keats made the acquaintance of Cowden Clarke, the well known commentator on the Elizabethan poets, who introduced him to the literary set in London, among whom were Shelley, Haydon and Leigh Hunt. After leaving Edmonton, Keats stayed for some time with Clarke and came up to London. He entered Guy's Hospital as a surgical pupil. In his second term at Guy's, Sir Astley Cooper introduced him to two senior students, one of whom was George Cooper, afterwards demonstrator of anatomy at St. Thomas's Hospital, with whom he went to share rooms nearby Guy's at the house of a tallow chandler named Markham. When his companions left the hospital a few months later Keats shared rooms in the same house with two students of his own year, George Wilson Mackereth and Henry Stephens. Stephens was himself a poet. He remarked that little Keats was fairly popular but was often teased, on account of his pride, his poetry, and even of his birth. It seems that the three friends spent several evenings in literary readings. At these they discussed literary matters, and Stephens has noted that they paid great attention to the opinions of Keats, which were generally diametrically opposed to theirs. Here, too, the poet's brothers frequently visited him, and were highly indignant that his fellow students should make fun of him, since they regarded his poetry as the first flights of genius. In the summer of 1816, Stephens left, and Keats went to live with his brothers, and in the following year went to lodgings in Cheapside.

From 1814 to 1817 little is known of Keats's life, but it is known that he attended Mr. Green's anatomy lectures diligently, of which Mr. Colvin, one of his biographers, has given an interesting account. He states that in the notebook in which Keats took down his own notes of a course or the beginning of a course, of lectures on anatomy, the notes showed no signs of an inaccurate and lax student. The only signs of a wandering mind occur on the margins of one or two pages. Poetry, indeed, had become Keats's chief interest, but it is obvious that at the same time he attended the hospital and did his work regularly, acquiring a fairly solid knowledge, both theoretical and practical, of the rudiments of surgical and medical sciences.

In 1818, writing to his friend Teignmouth, he refers to the books he read in his hospital days as follows: "Were I to study physics, or rather medicine again, I feel it would not make the least difference in my poetry; when the mind is in its infancy a bias is in reality a bias, but when we have acquired more strength, a bias becomes no bias. Every department of knowledge we see excellent, and calculated to a great whole. I am so convinced of this that I am glad at not having given away my medical books, which I shall look over again to keep alive the little I know thitherward." He gives no names of books, but probably among those he possessed were those most in vogue at Guy's then. These were the *London Dissector,* the contemporary Cunningham; Fyfe's *Anatomy,* in three octavo volumes; Innes *On Muscles;* Barclay *On Arteries;* and Saunders *On the Practice of Physics.* Of the larger works, there was Cheselden's magnificent *Osteographie,* with its beautiful plates, hardly, however, a student's book, and Clarke's *On Diseases of Children.* In March, 1816, Keats was appointed dresser to Mr. Lucas. At that time "Calomel" Curry and Alexander Marcet were full physicians. Among Keats's contemporaries may be mentioned Bright, of Bright's disease fame.

The pupils were then classed as apprentices and

ressers, the rule being that each surgeon had four ollowers, of which two at least had to be dressers. A certificate was required from each pupil, signed y his former master, to vouch for the sobriety and noral character of the pupil. Each dresser paid 50 a year, the money being pooled and divided beween the surgeons and the apothecary. There was ne "take-in dresser" who was lodged and boarded t his own expense, and had the right of getting a riend to assist him. After the weekly "take-in" the urgeon who took in waited until his patients were varded and then went round to prescribe for them. No history of the case was taken, but the diet was narked on the ticket. All orders were given verally to the dresser or ward sister. The more inlustrious dressers kept notes of their own cases. The physician, however, acted differently. Each case aving been examined the physician dictated the hisory and the symptoms in Latin, sometimes not first lass, as it is related of a choleric member of the taff who bawled out "*faber Londiniensis* as the quivalent for every Borough occupation. Guy's Iospital is in that part of London known as the Borough district. The students were chary of askng questions for fear of being snubbed.

Each surgeon and his colleague physician vent round twice a week, the former at twelve, the atter at one o'clock. The physicians were more unctual than the surgeons, whose pupils, according o their liking of the surgeons of the day, awaited is arrival in the square in front of the hospital, ome in quiet conversation and not a few in horselay. On the surgeon's arrival the fun ceased. He vas immediately attended by his dressers whose digity was indicated by each carrying a tin plaster box, n shape not unlike a knife box. The surgeons prorided their own instruments, and usually did the first ew dressings after an operation. The only medines used on the surgical side were calomel, Dover's owder and castor oil. The surgeon and most of the upils went round the wards with their hats on.

These sketches of the procedures and customs in ospitals in England in the time of Keats are taken rom the records of one South, who was at Guy's t about the same time. They are put down in this ccount of Keats's medical career because they are nteresting in themselves to medical readers, and ive an impression of the atmosphere in which Keats ived for the greater part of a year.

There are contemporary accounts of his appearnce at that time. A wonderfully mild face, with arge grey brown eyes, a rather pale complexion and wide mouth, a face which in profile showed clearly hiselled lines and marked regularity of features. He dressed shabbily, carelessly, disregarding appearnces as he did opinions, and possessed an amount f moral and physical courage which must have tood him in good stead. At the same time there is vidence of his exceeding mildness of disposition, mildness that amounted almost to shyness as he imself says in surgical work requiring initiative. Writing to Browne he says: "My last operation was he opening of a man's temporal artery. I did it with the utmost nicety, but reflecting on what passed hrough my mind at the time, my dexterity seemed miracle, and I never took up the lancet again." When it is borne in mind that these were the preanesthetic days, and that much less sensitive men than Keats, even a hardened surgeon such as Sir Astley Cooper broke down on occasions when operating, there is little cause for wonder that Keats foreswore the use of the knife. While at Guy's, Keats wrote and composed several of his shorter poems. The exquisite ballad

> Oh, what can ail thee, knight at arms,
> Alone and palely loitering.

is perhaps the only one of his better known poems, that was certainly finished in his hospital days.

At the latter end of 1817 he finally left the hospital, first visiting his friend Clarke with whom he stayed for two months. He then went on a long walking tour, his health having broken down because of his devoted nursing of his brother Tom dying of consumption. He never took up the practice of medicine, although on more than one occasion when his literary prospects looked dark he solaced himself with the thought that his gallipots, to which the Edinburgh reviewers were strongly advising him to betake himself, might yet bring him a livelihood. In spite of the assertions to the contrary and of Byron's fancy that he "was snuffed out by an article," the Edinburgh reviewers, harsh and as it was proved absurd as their criticisms were, had nothing to do with Keats's untimely death.

It is obvious that Keats was in no respect fitted for the life of a medical man. His health, his temperament, his extreme sensitiveness, all conspired to render such a career impossible. On the other hand, there is no reason to suppose that he did not know the theory and to some extent the practice of medicine as well as it was known by the majority of students when they qualified. "It may be," as the writer says in a review of Keats's life published in *Guy's Hospital Gazette* in 1905, "that he went through his hospital course as a discharge of duty he owed his guardian, as many of us do, finding in after life that our true vocation lay in another direction, the law, authorship, politics, commerce, but even then his environment must have influenced him, enlarged his purview and broadened his compassion for suffering and strengthened his pity and charity." But such influence is not shown in his poetry. There is no evidence, direct or indirect, that among the many influences that must have reacted on him his hospital career so reacted. His work or letters are lacking in any references to show that his medical work influenced his poetry. Comments on sickness or hospital life are absent from his poetry. Coleridge and Shelley, both morbidly inquisitive as to medicine and medical matters, have many more direct medical allusions than can be found in the writings of Keats. And yet, as the writer of the article on Keats in the *Guy's Hospital Gazette* says, "though one finds no direct allusions to his medical experiences can anyone honestly doubt that it did not influence him?" For his part he prefers to see, in the restraint of that pathetic sonnet "When I have fears that I may cease to be" in the second stanza of the *Ode to a Nightingale* where he speaks of forgetting—

> that thou hast ever known
> The weariness, the fever and the fret,
> Here where men sit and hear each other groan,
> Where palsy shakes a few, sad, last grey hairs,
> Where youth grows pale and spectrelike and dies.

and in the many other passages scattered through his poems, direct proof of that result and therefore an indirect testimony to the fact that his sojourn at Guy's enriched his mind and was not without effect upon his work. Among those who wrote on Keats was James Russell Lowell.

Keats died from pulmonary tuberculosis on February 21, 1821, barely twenty-six years of age, in Rome, in which city he was buried. He was the *Adonais* of Shelley

> Oh, weep for Adonais—he is dead.
> Like a pale flower by some sad maiden cherished,
> And fed with true love tears, instead of dew.
> The soul of Adonais, like a star,
> Beacons from the abode where the eternal are.

Contributors to the Science of Medicine

René Théophile Hyacinthe Laennec

Théophile Laennec was born on February 17, 1781, in the venerable Episcopal port of Quimper in Brittany, and his birth registered at his baptism the next day in the church of St. Matthew. He was a pure Celt and said to have been descended from the Breton poet, Malherbe. Many members of his family had been lawyers, among them some magistrates. His father was a member of the bar and held several appointments, but because of his capricious temperament was never able to hold for long any position. Sir William Hale-White in his biographical sketch of Laennec describes the father as "a man with a charming manner, a cheerful disposition, good health, much literary culture, always writing poetry, but lacking common sense, proper pride, and genius, he did nothing worth doing with his life." Since he showed not the least aptitude for educating his children, a failing which his friends attributed to the poetic temperament, his little daughter was sent to live with an aunt, and an uncle in Nantes took over the teaching of the two boys. This uncle had practised at Quimper, taken a degree at Paris, studied in England under Hunter, and taken a second degree at the University of Nantes. When the boys arrived he was rector of this university. He, his wife, and his wife's mother soon became devoted to the children, but Théophile was their favorite. The household at that time was composed of the above persons, several servants, a much pampered dog, and a pet parrakeet. The boys were sent to school, and at eleven Théophile adopted the profession of poetry.

Fortunately, his education does not seem to have suffered greatly from the atrocities of the Revolution, of which Nantes was one of the centres. Here, history tells us, three thousand persons were put to death, and, the guillotine being too slow, they were cut down in ranks with chain shot. Men and women were tied together naked and thrown into the river. A permanent guillotine was erected in front of Laennec's house, and the sight of the heads falling was so continuous and terrible that the children were not allowed to look out from the front windows of the house and had to go to school by a back way. The family finally succeeded in getting another house in a more pleasant part of the city. "We come across these two little boys," writes the biographer, "out of bed in the small hours of the morning of June 8, 1794, by the orders of Robespierre, to take part in the Fête de l'Etre Suprême, which began with cannon fire at five a. m., Théophile, then thirteen, wearing a sword."

When their father married again the next year, he wanted the boys to come home to live; but Théophile decided to stay in Nantes and study medicine. His uncle kept him to his purpose through a certain amount of discipline and the encouragement which he needed, combined with protection from conflict with his vacillating father. Théophile, often poverty stricken, would write: "My dear father, I have no longer hat nor shirt, nor a sou in my pocket; if you are as hard up as I am, I am sorry for you; if you are well off, I beg you to send me two louis." Twice he visited his father; once his passage money was delayed for weeks, then the vessel was held by contrary winds, so Théophile landed and walked many miles to Quimper, only to find his father away from home, although the son had been led to believe that he would be there to welcome him. When he did find his father, the latter opposed with all his power his return to Nantes; but the boy's uncle sided with him against the father, and helped him to get away and walk to Nantes. He arrived there after four and a half days, with no money, and thoroughly out of spirits. Sir William Hale-White writes: "The father's parsimony restricted all the pleasures of life, and it needed an uncle out of the ordinary to deal with such a parent, and to help the nephew hampered by these discouragements, and by the disturbed state of mind caused by the constant cannon firing, guillotining, and other horrors of the Revolution. Guillaume successfully and affectionately did both these things. There is every chance that, had it not been for him, Théophile would never have continued his work; therefore it is likely that to Guillaume we owe the blessing of the great Laennec."

In his fourteenth year Théophile entered the School of Medicine at Nantes and diligently attended Bacqua's dissections and anatomical lectures. Even in revolutionary times that a boy of his age could be appointed military surgeon is difficult to believe, but such was the case with Laennec. In 1797 the lad and his uncle went to La Fraternité, where Théophile studied under Ulliac. Here he found time not only for his medical studies, but also for music, dancing, and country walks. Music was his favorite of all the arts, and he learned to play the flute very well. Throughout all these years he was greatly hampered by his father's penuriousness; he had to give up tem-

orarily finishing his course at Paris for this reason. Finally by means of a legal agreement his father was forced to contribute a certain sum for his son's maintenance and tuition in Paris. To save his money, Théophile set out from Nantes for Paris on foot, and, with the help of some lifts, arrived there in less than two weeks. Many men would have been overcome by a much less serious obstacle than the niggardliness of a father who would do nothing to help his son get an education, yet fawned upon him whenever he wished to profit through his son's prominent friends. Laennec had a still greater obstacle to conquer—that of ill health. He was afflicted with asthma, angina, insomnia, neurasthenia, and phthisis.

Yet so rapid was the progress of the brilliant young physician that by 1804 he had been made one of the editors of the *Journal de Médicine, de Chirurgie, et de Pharmacie,* and had been awarded the Grands Prix in both medicine and surgery. His thesis was on *Propositions sur la doctrine Hippocrate relativement à la médecine pratique,* and was a most brilliant contribution; nevertheless Laennec's father refused funds for payment unless his son would dedicate it to someone in a high political position in order that future favors might be solicited. But Théophile remained obdurate and dedicated the thesis to his uncle Guillaume. "This small, attenuated, bony figure of a man, with prominent cheek bones, hollow cheeks, thin nose and lips, calm, reflective blue eyes, a long head covered with carelessly combed, abundant chestnut hair; who was not handsome but not ugly, whose face showed much distinction and intelligence, having gained his degree, was now cast up on the world to earn his livelihood and to illuminate it with genius not often excelled in our profession," writes his biographer.

LAENNEC
(*From a painting by Dubois in* 1812.)

Before long the brilliant young doctor became so busy professionally that he had given up most of his social life, to which he was devoted. He gave up also his editorship and his lectureship because they were a strain upon his delicate health. His father's affairs continued to be a source of great worry and anxiety to him, and he had to pay many of his debts and make him an allowance to live on. By twenty-five, he had reached the high position of the greatest morbid anatomist of his day, and was studying auscultation and conceiving the plan of his great book. Throughout these strenuous and troubled years, Laennec never gave up or forgot his church and charity. He was a devout Roman Catholic and gave his services free to a large dispensary for the poor. In 1814 when Paris was full of sick and wounded soldiers, he volunteered his services to care for them, and collected in his wards all the Bretons who were miserable and homesick, not being able to make themselves understood nor to understand French. Typhus raged in Salpêtrière and two hundred and fourteen deaths occurred among staff members.

In 1819 he was able to give to the world his masterpiece, that great, two volume work entitled *De L'Auscultation Médiate ou Traité du Diagnostic des Maladies des Poumons at du Coeur, Fonde principalement sur ce nouveau moyen d'exploration.* Before this time, medicine, if not empirical, was permeated with metaphysics. Laennec's book was a revelation in that it taught that medicine is a science depending upon observation and experiment. There are many reasons why this remarkable book became at once so famous, among them the fact that it contains perfect descriptions of clinical symptoms and postmortem appearances; it has an account of auscultation with the stethoscope; and its style from a literary point of view is classical.

In 1818 Laennec's health broke down and he retired for a time to his country house in Brittany named Kerlouarnec, "the place of the foxes." Here he soon recovered and returned to his Paris quarters and the care of his faithful maid, Angélique, who took a mother's interest in him throughout the whole of his life in Paris. He was busy again for a year, when his health broke again, with probable incipient phthisis. So he gave up his house in Paris, the good Angélique, sold some of his belongings, and departed once more for Kerlouarnec, where he spent two years caring for the poor, teaching the country doctors, and amusing himself with outdoor sports and occupations. But Paris and his friends and colleagues there called him again, and once more he returned to play the part of successful physician and hearty comrade to his many friends, as well as to receive abuse and ridicule for his medical discoveries. His reputation spread more quickly in foreign countries than in France.

He became again very wealthy, and in 1824 married an old friend, Madame Argou. The early months of his married life were doubtless the happiest of his life, for his wife took care of him and attended to his business affairs. His health improved greatly, but the benefit was short, for soon his feeble constitution gave way again, and he started for his beloved Kerlouarnec with his wife, his cook, and two spaniels. The journey by carriage was long and difficult, and the weather was wretched. Once the coach upset and rolled down an embankment. No one was hurt, but the accident caused a delay of three days for repairs. When they arrived the great physician was so weak that he soon went to bed, from which he never rose again. On August 13, 1826, the end came. He was buried in a place of all others he would have chosen—on a hill overlooking a rugged cliff and an everchanging blue-green sea.

Editorial Articles

SOME OLD WIVES' REMEDIES

Superstition notoriously dies hard and many of the marvellous remedies devised in days gone by for the ills to which men are heir are still used by the simpleminded in out of the way parts of the country. Some of these remedies are quite of the heroic variety and require a good deal of courage on the part of the sufferer to undergo. However, as one of these treatments is recommended for that insufferable ailment toothache, perhaps wonder at the pluck displayed will be modified when it is taken into consideration that the superstitious family believe in the vaunted cures.

The sympathetic cure advocated in a book entitled *Choice and Experimental Receipts in Physick and Chirurgery* and published in 1668 is as follows: "With an iron nail raise and cut the gum from about the teeth till it bleed, and that some of the blood stick upon the nail; then drive it into a wooden beam up to the head; after this is done you shall never have the toothache in all your life."

Among the many alleged cures for rheumatism, feelingly referred to by Mr. Augustus Birrell as "that worst of all the 'isms," are these. In Holland it is believed that a potato begged or stolen is a preventive, while in certain parts of Northamptonshire it is still held that the right forefoot of a hare kept constantly in the pocket is an efficacious remedy.

The tale goes that some years ago a servant in an old world district of England was found to have been confirmed three times, and on being questioned, said that she had discovered that confirmation was the most efficacious mode of treating rheumatism.

The curing of smallpox in the Middle Ages according to ancient chronicles presented no difficulties. John of Gaddesden, physician to the Court of Edward II of England, adopted the simple expedient of wrapping his patients in red cloth. These are his directions: "Let scarlet red be taken, and let him who is suffering smallpox be entirely wrapt in it, or in some other red cloth; I did this when the son of the illustrious King of England suffered from smallpox. I took care that all about his bed should be red, and cure succeeded very well."

The following original cure for scarlet fever is to be found in an old volume of *Notes and Queries*: "The Irish, when anyone has been attacked with scarlet fever, are accustomed to cut off some of the hair of the sick man, which they put down the throat of an ass. By this means the disease is supposed to be charmed away from the patient and to attack the ass instead." In *Sussex Folk and Sussex Ways,* a book written by the Rev. John Coker Egerton, a strange remedy for goitre is mentioned. "I have known a parson," he writes, "who went a long distance to have a live snake applied to the throat for goitre; and I have known of a servant girl who tried the virtue of a dead one for the same malady. It was discovered, and being obliged to throw it away, she said she would go somewhere and get a dead man's hand to put to her neck."

A MEDICAL POET

It has been proved many times that medicine and poetry are by no means incompatible. A few great poets have been medical men also, although it must be confessed somewhat incidentally. There have been a sprinkling, however, of followers of Æsculapius who have made their living by medicine and in their leisure time have been compounders of very fair verses. The Newcastle apothecary, Peter Pindar, expressed this view in verse admittedly not of a high order:

> And why should this be thought so odd?
> Can't men have taste who cure a phthisic!
> Of poetry though patron god
> Apollo patronized physic.

In England in the time when coffee houses were the vogue several physicians dabbled in verse and gained a fleeting fame as literary men as well as healers. Some of their poetry lives to this day. Among the best of the poet physicians were Garth and Akenside. Garth had a vigorous and sarcastic style while Akenside wrote in the florid amorous manner of the age. Mark Akenside, at any rate, had no doubts as to the inherent incompatibility between medicine and the muses. He was convinced that he was a poet of the first flight and indeed some of his verses were pleasing enough, and such a judge as the great Samuel Johnson ponderously expressed his preference for the work of Akenside to that of Gray. Posterity has reversed this decision to such an extent, that while Gray's fame is established for the ages Akenside is comparatively unknown.

Mark Akenside was born at Newcastle-on-Tyne in 1721. After a brief period of study for the ministry he changed his aims and became a student of medicine at Edinburgh. He took his degree at Leyden in 1744 and came to London, seeking to establish himself in practice with but indifferent success. Yet, he was appointed assistant physician to St. Thomas's in 1759 and two months later succeeded to the senior staff. Lettsom, the well known Quaker doctor, was then a student at St. Thomas's,

and considered Akenside "the most supercilious and unfeeling physician" he had ever known. Lettsom, together with his friend and fellow Quaker Dr. Fothergill, in after years founded the Medical Society of London in 1778. Of him were written the satirical lines:

When folks is sick they comes to I
I physicks, bleeds and sweats 'em;
And, if in spite of that—they die—
What's that to I? I lets 'em.

Smollett, the novelist, who was also a medical man, had been unfavorably impressed by Akenside some time before his election to the hospital, and had introduced into *Peregrine Pickle* a caricature of the poet physician which is sufficiently scathing after due allowance for exaggeration has been made.

Akenside's chief publications were, in 1744, *The Pleasures of the Imagination,* and in 1764 *On Dysentery,* the latter by the way in prose. The following quotation will give an idea of the kind and quality of Akenside's effusions:

I looked, and on the flowery turf there stood
Between two radiant forms, a smiling youth
Whose tender cheeks displayed the vernal power
Of beauty; sweetest innocence illumed
His bashful eyes, and on his polished brow
Sat young simplicity.

THE MODERN NOVEL AND THE PUBLIC HEALTH

More and more the thinking health practitioner is beginning to realize that every activity of the community bears a relation to the community health, that the mental pabulum of the public is as important to its health as its physical food supply, that verminous literature may produce disease processes of the mind and soul just as surely as vermin may transmit the infectious organisms. Thus it becomes the duty of those who are striving to increase the span of useful life to study the work and recreation of the community, its habits of eating and thinking, its index of selfrestraint. In this connection, it is interesting to consider the effect of modern literature, as represented by the printed page and the screen, upon the mental and bodily health of the present and the future.

To an older generation, reared in the prudish atmosphere of the late Victorian era, the literature of today is inexpressibly vulgar and immodest. It was taught to say limb instead of leg and believed that *Robert Elsmere* was a wicked, vicious book; many a careful mother would not allow *Trilby* in the house because some doubt was cast upon the heroine's purity; the dime novel and kindred scribblings were under the parental ban.

It is difficult to imagine a modern child as even desiring to read such pallid publications. *Robert Elsmere* is inexpressibly boring to the reading public of today. Nobody cares whether or not he was wicked. As a matter of fact, compared with the heroes who strut through the books of the hour, his was a saintly character. Poor *Trilby* was a colorless nun beside the long procession of prostitutes which marches through our "six best sellers." *Nick Carter* and all the other notables of the Jesse James school of fiction haven't a thrill for the child who nightly sees fair ladies thrown over the cliff by burglars who have just given a practical demonstration in the art of safeblowing.

Illegitimacy used to be a word to be spoken beneath the breath; nowadays no novel is complete unless it has at least one child born out of wedlock. Adultery was once a word which made people self-conscious when they recited the Ten Commandments; recently a cleareyed British judge asserted in the course of a world famous trial that "adultery is to the young people of the present day merely a quaint ecclesiastical term for what seems to them the great romantic adventure of their lives."

What is the effect of this flood of pornographic thought upon the public mind? It used to be the rule in the more risque novels of three decades ago that the girl who left the path of virtue inevitably became a mother. What is the consequence of an avalanche of books which show that the socalled wise girl need suffer no penalties for indiscretion provided the fact is not too widely known? What is the child's reaction to a movie which depicts the principal character as following the path of dope and degradation only to be miraculously salvaged by a beautiful heroine or sturdy hero, immediately rehabilitated in the community and settled in a life of luxurious prosperity and respectability? The boy who sees night after night just how crimes against society may be committed is gaining dangerous knowledge; disrespect of law and order is engendered by witnessing the filmed spectacle of the making of homebrew and such turning of disobedience of the statutes into a joke.

One of the shibboleths of the health movement is "the health education of the general public." Thinking health workers believe that the focal point of this education is the child. The attempt is made to indoctrinate obedience of the laws of personal and civic health, to teach the citizens of tomorrow to live lives of mental and physical cleanliness, purity and decency, to bring them to the acceptance of community responsibility. This is laying the cornerstone of the health edifice of the nation. Capable, selfless men and women have dedicated their lives to this cause, yet day by day the commercialized thrill mongering of press and camera is tearing down that which has been so carefully wrought. As at present conducted, the censorship of motion pictures is a deceitful farce; of the censorship of the decadent literature of per-

version which the public is now greedily consuming, there is none.

The assertion is made that this fashion of vulgarity and florid passion is a symptom of the expansion of individual liberty, that out of this iconoclastic destruction of the code of decent selfrestraint will grow a larger freedom, that this wholesale exhibition of the nastiness of depraved minds will arm the child for life's battle, that the older generation has always acted as a brake on the wheel of progress by its rigid adherence to the standards of the past. These arguments are fallacious. Pruriency is not liberty; freedom does not grow upon filth; defilement with the muck of salacity is not an armor but a weakness; standards of human conduct which have stood the acid test of time are more reliable than the unproven theories of license.

The great hope lies in the stimulation of fastidious refinement in the public school child. The desire to excel in sports, the love of clean air, clean food and clean bodies carry with them an unconscious love of clean minds.

SYPHILIS OF THE THYROID GLAND

Physiological and clinical research of recent years has proved beyond a doubt that exophthalmic goitre is due to a lesion of the thyroid gland. A thyroiditis, which usually evolutes unnoticed, is the onset of the syndrome. Histologically, this thyroiditis provokes a glandular dyshyperplasia, a lesion which progressively develops and little by little vitiates the endocrine secretion. Numerous infectious processes give rise to Basedow's disease, especially tuberculosis, typhoid fever and acute articular rheumatism. Syphilis appears—among the etiological factors incriminated—to have been somewhat neglected by clinicians regardless of its great frequency and the well known multiplicity of its lesions.

Clinically, the action of the spirocheta pallida on the thyroid gland may produce a secondary or tertiary thyroiditis, a gummatous, sclerogummatous or interstitial form, syphilitic dysthyroidies and later manifestations, among which myxedema and exophthalmic goitre are to be found.

It is very probable that Basedow's disease of syphilitic origin will be more frequently diagnosed when it has become better known to the profession than it is at present. However, cases occurring during the evolution of acquired syphilis are becoming more numerous. The syndrome may appear at any time during the morbid evolution, sometimes in full secondary stage, at others in the tertiary phase, and occasionally as much as a quarter of a century after the chancre. The localization of the initial lesion, the virulence of the infection, the intensity and continuity of the specific treatment do not appear to play any part in the ulterior appearance of the disease.

Exophthalmic goitre may be also encountered in hereditary syphilis where it is more prone to assume a larvate form when the luetic virus is very attenuated. The notion of infection would likewise seem to explain the histories of familial Basedow's disease, which until now have been regarded as the result of neuropathic heredity, which at present must be looked upon as very problematical.

The morbid associations that exophthalmic goitre contracts with various diseases would seem to plead still more in favor of the frequency of its syphilitic origin. In reality, the clinical entities associated with Basedow's syndrome are invariably, or at least frequently, tainted by syphilis, as in order of frequency one has locomotor ataxia, general paralysis, epilepsy, chorea, vitiligo, and so on.

Syphilis thus deserves an important place in the etiology of exophthalmic goitre and when making a diagnosis of this affection the patient's antecedents, morbid associations, Wassermann reaction and results of specific treatment should be examined.

It is probable that as time goes on and still greater advances are made in laboratory technic that larvate forms of syphilitic exophthalmic goitre will be detected and by an early diagnosis specific treatment can be carried out almost from the onset of the process, namely an intensive and long continued resort to the arsenical compounds and mercury preparations, while in stubborn cases iodine medication is indicated.

ASTHENIA DEPENDENT UPON POLYGLANDULAR DISTURBANCES OF SYPHILITIC ORIGIN

During the past twenty years syphilis has singularly widened its domain, hence of late certain types of asthenia due to polyglandular disturbances of syphilitic origin have been reported, whose pathogenesis has been surrounded by obscurity. These disturbances are principally met with in women without any clinically appreciable factor. The patient complains of a continual or intermittent state of fatigue, which is increased by the most varied causes. They suffer and their household likewise and no means can seem to be found to procure permanent recovery. This morbid state, most variable in degree, is subject to alternatives of amelioration and relapse. Usually these subjects are regarded as poor in health or apathetic, incapable of any continued work. By rest, quiet, isolation, life in the open, or opotherapy and physiotherapy, a sedation of the symptoms may result, but it is temporary and incomplete. From the merest shock the morbid state returns and these relapses react on the mental state

nd change the patient's psychism. They become motive, depressed and physically unfit.

The pathogenic formula of these phenomena vary with the current medical doctrines—autointoxication from slowed metabolism; intestinal disturbances and chronic enterocolitis source of intoxication; general nervous disequilibrium; constitutional neurasthenic state, etc. The recent studies of functional disturbances and isolated or synergic changes of the endocrine glands seem to have thrown new light on this question of cryptogenetic asthenia. The well known asthenia of Addison's disease has put observers on the right road, and on the other hand, the part played by syphilis, especially the hereditary form, in the pathogenesis of certain pluriglandular syndromes no longer seems to be doubtful. Certain groups of facts are of a nature to carry conviction. The recent work of Hutinel, Lereboullet and Mouzon place the syphilitic antecedents in the rank of the constitutive element of this morbid process, while Hutinel has demonstrated the preponderant intervention of hereditary lues in glandular dystrophies of early life, particularly in their mild, discrete forms which are the most common. Hence syphilis realizes an attenuated type of the pluriglandular syndrome.

In the asthenic subjects in question, signs of endocrine disequilibrium are met with, such as headache, vertigo, indefinite pain, arthralgia, mild edema and above all a high blood pressure. The list of symptoms is most incomplete, their variety and polymorphism prohibiting the conclusion that a single gland is involved, but rather multiple involvement of the endocrine system. The asthenia rarely is the only phenomenon present, orthostatic albuminuria, frequently associated with vertigo and dyspeptic disturbances, often coinciding with it. Hence Merklen and his school believe that many cases of asthenia should be regarded as a polyglandular disturbance having a luetic basis.

This conception is in conformity with what we know of the asthenizing character of syphilis undergoing its evolution. Fournier referred to the asthenia of the secondary phase and it has been generally noted in the serious accidents of this infection, such as cerebral syphilis and tabes, while Hutinel has referred to laziness, indifference, want of intelligence, memory and attention in hereditary syphilitics.

In the cases envisaged the proof of their syphilitic origin is not at once apparent, because objective evidence is wanting. These are patients with ignored syphilis or who have given up specific treatment long since, or else they are hereditary syphilitics without symptoms. Occasionally the asthenia develops after labor, an acute disease of the crisis of puberty, all of which conceal the true origin of the asthenia. Nevertheless, there are three proofs of the specific nature of the asthenic accidents. First, syphilis is often found in the husband or wife of the patient, be it admitted or detected by clinical and serological examination. Secondly, when the patient is a sickly, debilitated child, with mediocre intelligence and lazy, syphilis should be looked for in the parents and hereditary lues will often be discovered in the child. Lastly, in instances of syphilitic asthenia the Bordet-Wassermann is positive. Should doubt exist the more sensitive antigen of Desmaulière should be employed as it reveals the presence of mildly virulent syphilis.

The results of specific treatment are to be taken into account and will usually have a marked beneficial action where all other modern treatments have failed, recovery actually ensuing.

THE CEREBROSPINAL FLUID IN HEREDITARY SYPHILIS

In an unusually complete study on this subject (*Thesis,* Toulouse, 1924), Dr. Bounhoure shows that hereditary syphilis is far less frequently mucocutaneous in its manifestations in children, while it gives rise to specific lesions in the neuraxis and its envelopes, as well as in the visceral parenchymas. What most usually are observed are those lesions involving the nervous system and it is these processes that are chiefly studied by Bounhoure.

In all cases where nervous syphilis is suspected lumbar puncture is imperative for the study of the cerebrospinal fluid. The percentage of albumin must first of all be ascertained which, in the normal state, is ten cgm. to the thousand c. c. Hyperalbuminosis is mild in the chronic hereditary syphilitic encephalopathics; it becomes more marked— thirty to forty cgm. and more—in hydrocephaly and in the convulsive syndromes and in acute luetic meningitis.

Cellular reactions—lymphocytosis—are strong, medium or *nil* according to whether the process is acute or chronic, as well as the importance of the lesions. If the Bordet-Wassermann is done, it will be found positive in the serum in thirty-seven per cent. of children presenting a certain or probable hereditary syphilis, while in the cerebrospinal fluid the proportion of positive results attains fifty-two per cent. A positive reaction in the blood serum is a valuable sign in favor of hereditary syphilis, while in the cerebrospinal fluid it is practically a sure index of hereditary lues, especially when other changes of this fluid exist at the same time. Nevertheless, it is to be noted that during meningeal reactions in children a positive Bordet-Wassermann may ensue, but this becomes negative after the natural recovery from the acute episode without specific treatment, while during the evolution of a tuberculous meningitis in

a hereditary syphilitic the reaction may become positive from a kind of activation. In the purulent meningitides the reaction may be positive.

As to colloidal benzoin reaction, Bounhoure regards it as a very precise means of investigation, sometimes more sensitive than the Bordet-Wassermann, but as far as hereditary syphilis of the neuraxis is concerned, negative results of Guillain's reaction appear to be rather frequent. Undoubtedly this can be explained from the relative rarity of evolving syphilitic neuraxitis in young hereditary syphilitics. In many cases one is dealing with cicatricial sequelæ or dystrophies, these being fixed lesions generally giving rise to a negative benzoin reaction. In evoluting acute cases the Bordet-Wassermann and benzoin tests are both positive.

Lange's colloidal gold reaction was found to be more sensitive than the Bordet-Wassermann, and in the majority of cases the results were parallel with those of benzoin. But this reaction does not always appear to be specific and it must be admitted that its technic is delicate.

A FRENCH SARANAC

Next to Austria, France has the largest mortality rate from tuberculosis of any country in Europe. Realizing this fact, some prominent citizens of the country and Americans living in Paris started about two years ago a movement to supply France with a sanitarium for tuberculous persons that should be of the latest and most approved type, and equipped with all the requirements necessary to affording the best methods of care and treatment. With these ends in view, a village is now in process of construction which is patterned after our Saranac in the Adirondacks. Small houses are being built after Swiss chalet models on a plateau four thousand feet high near the little town of Passy, within sight of Mont Blanc, and just across the valley from St. Gervais-les-Bains. Each cottage will take care of from four to six patients. The initial bed capacity will be about four hundred, but additional houses will be built as fast as funds are forthcoming. The village will have a central laboratory and administration building, and a sanitarium for patients who are unable to pay for their care.

The French Government, because of its war burdens, has so far been unable to render material aid in this work, but it has given its formal recognition and support of the plan. The necessary funds are being raised through private subscription, a sum of more than one million francs having already been donated.

A committee has been formed to finance a memorial to the late Dr. Trudeau, who was a native of France but who came in search of lost health to America, where he remained and founded the great sanitarium at Saranac on Lake Placid. Members of this committee are Livingston Farrand, James A. Miller, William B. James, president of the Trudeau Sanitarium, and Edward R. Baldwin, of the Trudeau Foundation. American subscriptions are being received by Dr. Lucien Jouvard, president of the French Hospital of New York City, and treasurer of the committee.

OUR LATIN AMERICAN NEWS

People who live in the United States are likely to think of Central and South America as a vast wilderness, with a low degree of civilization and a generally backward cultural state. This impression is not correct. It is true that most of the countries south of the Rio Grande are not thickly populated, and in most of them the aboriginal Indian stock predominates, but a new spirit has come over Hispano-America, and with the improvement in the economic situation there is a broadening horizon for medicine and public health. The standards of living are being raised, and in Santiago, Chile, and the other capitals there is a degree of culture which will compare most favorably with that of cities of similar size in North America. As a result, there is an augmentation of social and community welfare work, and an improvement in the hospitals and similar institutions. Public health has taken hold of the upper classes, and the peasant finds himself being gradually led into the more hygienic ways of living. The schools now enjoy a greater latitude in their curricula, and health preservation is being inculcated to a greater extent in the rising generation. An endeavor is being made to combat illiteracy, and public sanitary works are being installed in cities which were old before Jamestown was settled. It is therefore thought that the readers of the Medical Journal and Record may find interest in some news items demonstrating the way in which progress is being made in Latin-America.

Obituary.

HUGH WALSHAM, M.D., F.R.C.P.

Dr. Hugh Walsham, M.D., F.R.C.P., who died at his residence in Harley Street, London, on April 13th last, was best known for his pioneer work, begun as early as 1896, on the application of the x rays to the diagnosis of intrathoracic disease. He was consulting physician to the City Chest Hospital, and consulting radiologist to both St. Bartholomew's Hospital and King Edward VII Sanatorium, Midhurst. Born in 1853, he was sent to King's College School, and went up to Cain's College, Cambridge, being also a student at St. Bartholomew's Hospital and at the Great Ormond Street Hospital for Children. In 1903 he was awarded by the Royal College of Physicians the Weber Parkes Prize and first medal for research work on tuberculosis. At the meeting of the British Medical Association in Birmingham in 1911 he was president of the Radiology

ection, and was vice-president of the Radiology ection of the International Congress of Medicine n 1913. Dr. Walsham published *Stereoscopic Skiagaphy in Diseases of the Chest,* 1899, and with Harison Orton *The X Rays in the Diagnosis of Diseases f the Chest,* 1906, as well as numerous papers in he professional journals. His chief recreation was he study of astronomy, especially solar physics. Dr. Walsham did not escape the penalty paid by most f the early x ray workers who failed to realize the isks they ran. But as a friend wrote of him: "With eady selfforgetfulness he discounted the loss of is hands in the largeness of his heart and of his esire to help and heal. It was a very patient and eroic ending to a noble and heroic life."

News Items.

Hospital News.—Plans are being made for a $600,000 ospital at Stamford, Conn.,

A bond issue was recently made for a $600,000 hospital t Tampa, Fla.

It has been proposed to erect a maternity and a children's ard at St. Joseph's Hospital, Far Rockaway, as a memorial to the late Dr. William L. Mulcahy. The estimated ost of the project is $200,000.

Industrial Hygene Clinic.—The Industrial Hygiene Division maintains jointly with the Reconstruction Hospital nd the College of Physicians and Surgeons a clinic for the tudy, diagnosis, and treatment of the industrial diseases. This clinic is situated at the Reconstruction Hospital, corner f 100th Street and Central Park West. Not only will ccupational diseases be studied, but later when the clinic rows doctors and nurses will be given special training in he methods of industrial medicine and surgery.

Society News.—Dr. Donald A. Nicholson, of Seattle, as elected president of the Washington State Medical Association, at the annual meeting held at Everett on August 14th, and other officers were elected as follows: Dr. Frederick H. Brush, of Yakima, first vice-president; Dr. Andrew A. Matthews, of Spokane, second vice-president; Dr. Curtis H. Thomson, of Seattle, secretary-treasurer, and Dr. John H. O'Shea, of Spokane, assistant secretary-treasurer.

A congress on military medicine and pharmacy will be eld in Paris, April 25, 1925. The two previous meetings were held in Brussels and Rome.

The National Safety Council will meet in Louisville, Kentucky, September 29th to October 3d. Many papers of interest to industrial physicians will be read.

The Colorado State Medical Society will hold its next annual meeting in Denver October 7th, 8th, and 9th, under he presidency of Dr. Melville Black, of Denver.

Civil Service Examinations.—Among the positions for which examinations will be held on October 4th by the Civil Service Commission of the State of New York, are the following:

Assistant Physician or Intern, County Tuberculosis Sanatoriums. One immediate appointment expected at the Broome County Tuberculosis Hospital at $1,500, one at the Glenridge Sanatorium in Schenectady County at $2,000 and one at Suffolk Sanatorium at Holtsville, N. Y., at $1,500.

Medical Inspector of Factories, State Department of Labor. $3,000 to $3,500. Age limits twenty-five to fifty years. Immediate appointment expected.

Psychiatrist and First Assistant, State Institute for Defective Delinquents, Napanoch, N. Y. One immediate appointment expected at $2,800 plus $720 to $960 a year allowed in lieu of maintenance.

Pathologist, State Institute for the Study of Malignant Disease, Buffalo. One immediate appointment expected at $5,000. Age limits thirty-five to fifty years.

Assistant Physician and Assistant Surgeon, State Hospital and Institutions. Salaries vary.

Technical Assistant (Immunology), Division of Laboratories and Research, State Department of Health. $1,201 to $1,500. Immediate appointment at $1,260.

Upper Egypt Health Resorts.—Announcement is made that the health resorts of Upper Egypt—Assouan and Luxor—have now returned to their prewar efficiency. This is of general importance, as they are well organized, and the English physicians practising during the winter season (November to March) have had great experience of the special advantages of the Upper Egypt climate in the treatment of such illnesses as rheumatoid arthritis, kidney disease and albuminuria, chronic bronchitis, asthma and other conditions. It is well known that Assouan as a health resort has the driest climate in the world, and the results obtained are remarkable. Dr. Leigh Canney, who has practised for over twenty years in Upper Egypt, is not returning, but will be succeeded by his colleague Dr. Percy Moore, who will be residing at Assouan during the season (November to March) in future.

Dr. Uhls Reports on Eye Conditions in the Near East.—Dr. Russell T. Uhls, of Kansas City, Missouri, recently returned to this country from four years' service with Near East Relief in the Russian Caucasus. Dr. Uhls has probably had a wider experience in the treatment of trachoma than any other oculist in the world. At the huge Near East Relief orphanage at Alexandropol he and his assistants gave approximately 112,000 treatments a month to an army of ambulatory patients. In three years he reduced the number of sufferers from this scourge in the Alexandropol hospitals from fourteen thousand to three thousand. Dr. Uhls travelled more than ten thousand miles into Turkestan, Persia and Central Asia studying the eye conditions which are so serious a menace to not only the Orient but the entire world. The reports which he brings of his experiences will be welcomed by ophthalmologists and by students of the medical aspects of immigration.

Personal.—Dr. Walter J. Craig, assistant director of Johns Hopkins Hospital, has resigned to take a position in the department of surgery at Yale University. He will be succeeded at Johns Hopkins by Dr. John H. Snoke, who until recently was superintendent of St. Luke's Hospital at Shanghai, China. Dr. Craig will become assistant resident surgeon in the New Haven Hospital, where he served as intern after he was graduated from the medical school.

Dr. Archibald Mercer, of Newark, has resigned as president of the Medical Society of New Jersey, on account of poor health. Dr. Lucius F. Donahoe, of Bayonne, becomes acting president.

Dr. Lancelot Ely, of Somerville, N. J., has been promoted from Major to Lieutenant Colonel of the Medical Officers' Reserve Corps.

Mr. Carl A. Brimmer is the new superintendent of the Mansfield General Hospital, Mansfield, Ohio. Mr. Brimmer was formerly superintendent of the Touro Infirmary Hospital of New Orleans.

Dr. Francis V. Gowan, of Philadelphia, has been appointed instructor in laryngology at the University of Pennsylvania Graduate School of Medicine.

Dr. J. H. L. Cumpston, Director General of Health of Australia, paid a brief visit to the State Department of Health at its Albany headquarters, on Saturday, August 23d. He was accompanied by Dr. F. F. Russell, general director of the International Health Board and member of the New York State Public Health Council.

Dr. John A. Fordyce has been elected a foreign honorary member of the Vienna Dermatological Society.

Dr. Wells P. Eagleton, of Newark, N. J., recently sailed from San Francisco, on a trip around the world.

Dr. Charles B. Keeley, of Jersey City, has been appointed a member of the New Jersey State Board of Medical Examiners, to fill the vacancy caused by the death of Dr. John J. Mooney.

Dr. Carlisle S. Boyd has been appointed attending physician to the Willard Parker Hospital.

Dr. Harry R. Wahl, professor of pathology and bacteriology at the University of Kansas, has been appointed acting dean of the Medical School.

Dr. Frederick H. Verhoeff has been appointed professor of ophthalmic research in the Harvard Medical School, and Dr. George S. Derby has been appointed Williams professor of ophthalmology to succeed Dr. Alexander Quackenbos, recently retired.

Dr. Burton T. Simpson, of Buffalo, has been appointed superintendent of the State Institute for the Study of Malignant Diseases to succeed the late Dr. Harvey R. Gaylord.

Foreign Correspondence.

VIENNA LETTER

(From our own correspondent)

Vienna, *March 20, 1924.*

THE STUDY OF UROLOGY IN VIENNA

Urology as a separate specialty had its origin in Vienna, when Nitze demonstrated the first cystoscope before the Gessellschaft der Aertzte in 1879. From that time until the present, Vienna has been recognized as a centre of urological teaching, many of the most prominent urologists in America and on the Continent having been students there under such leaders as Von Frisch, Ultzman and in later years, Zuckerkandl, the latter being the founder of the present Vienna school of urology.

Vienna today presents a great variety of opportunities to the American student of urology. The largest and best equipped of the hospitals is the Kaiser Jubiliumspital. The urological service consists of sixty beds under the direction of Primarius Kroiss. Among the other leading clinics are those of Rubritius, who has a service of twenty-five beds at the Wiener Poliklinik, Blum at the Sofienspital, and Gagstatter at the Rudolfspital also having about an equal number. There are other smaller urological departments scattered throughout the city, each one of which has attached to it as an integral part, a proportionately large outpatient department.

While urology as such is established on a firm basis, it still meets with considerable opposition from the general surgeons, especially the older men. Von Eiselsberg, who is the head of the First Surgical Clinic and a great power in medicine in Vienna, considers urology as a subdivision of general surgery, and has not organized a urological department in his clinic. Practically all the other large hospitals, however, have urological services entirely independent of the general surgical service.

American physicians going to Vienna and desirous of doing postgraduate work of any kind should go at once to the American Medical Association which is located on Spitalgasse directly across the street from the Allgemeines Krankenhaus. This organization was founded in 1901 by a group of Americans, and except for the interruption necessitated by the war, has, in spite of a constantly changing personnel, continued to function ever since. Membership is not restricted to Americans, all English speaking physicians being eligible to membership on payment of a small fee. There are usually about 125 enrolled from all parts of the world.

All work is arranged for through the association, the various courses in progress or in process of organization are posted on bulletin boards in the club rooms, with full information as to length of course, fee, instructor, etc. All fees are paid through the desk secretary, who has been with the Association since 1910, and is very well informed on all matters pertaining to medical study. She is also familiar with hotels and boarding houses, the rates they charge and the accommodation they can provide, and can even provide governesses for those doctors who may come over with their families.

Fees charged for courses are fixed by agreement between the officers of the association and a committee of the faculty of the University of Vienna. This obviates the necessity for any bargaining between individuals, and has done much to promote good feeling between members of the faculty and the association. Prices charged vary from three to six dollars an hour, depending upon the type of work and the rank of the instructor. This charge is divided *pro rata* among the men taking the course. Certain of the professors such as Tandler in anatomy or Finger in dermatology receive ten dollars an hour for their courses, but these are didactic hours, at which ten or more men are present so that the cost is not excessive. The American Medical Association publishes a yearly catalogue containing all this information—a copy of which may be obtained by writing to the secretary in Vienna.

Work in urology may be obtained in two ways—by working as externe in a hospital and dispensary, and by taking courses. A combination of the two is very desirable, especially for the man who intends to remain a longer period of time. A man wishing concentrated work on a single phase of the subject, can best obtain what he desires by taking courses in this subject, at which specially selected material is presented. It is here that the question of language comes up. Practically all courses are given in English, and ignorance of the German language is no barrier in that respect. For work in the hospital and outpatient departments, however, a knowledge of German is extremely desirable, in order to understand what is said at ward rounds, and to obtain histories from patients.

Americans are received into the clinics on quite the same basis as the native Austrians, the amount of work given to them depending upon the length of time they remain in the clinic and the ability and interest displayed. They are assigned cases, make the necessary examinations, cystoscopic and otherwise, administer treatments, and assist in the operative work. Their knowledge of German permitting, they are assigned bed patients, writing histories, etc. Courses in cystoscopy, urethroscopy and clinical urology are usually given late in the morning.

Afternoons are usually devoted to anatomy and pathology. Cadaver material is extremely abundant, an autopsy being performed on every patient dying in any public hospital. Autopsies are performed in the morning, and in the afternoon, the organs of these postmortem examinations are presented in the gross pathology course, together with the clinical findings, diagnosis, treatment, etc. All errors in the clinical management of the case are duly brought to light, sometimes much to the chagrin of the clinician.

Anatomical dissections can be made at the Anatomical Institute under the supervision of the assistants in the institute. Operative surgery on the cadaver is very readily to be had, there being an abundance of fresh material at the Pathological Institute of the *Allgemeines Krankenhaus* or at any of the larger outlying hospitals. A great deal of this work is done at the Kaiser Jubiliumspital.

There are a number of courses given in Vienna that because of their great merit, deserve special mention. Professor Tandler, who together with the late professor Zuckerkandl, has just published a book on the *Anatomy of Prostatic Hypertrophy*,

gives a course on the anatomy of the pelvis, that always attracts more than a full quota of men. He has some splendid specimens of the various types of prostatic hypertrophy. Professor Stoerk, who specializes in the pathology of the genitourinary organs, and has done a great deal of work on Grawitz tumors, presents a course in genitourinary pathology, both gross and microscopic specimens being shown. The clinical history of the case is given and discussed from the viewpoint of possible errors in diagnosis and treatment, and the correlation of the clinical findings with the pathological picture.

Sgalitzer of the Eiselsberg Klinik has had a large experience in the x ray of the genitourinary tract, and has a great number of very interesting plates. He has devised a method of taking bladder pictures in a semisitting position, in this way obtaining a good view of the posterior wall of the bladder.

In urethroscopy, Glingar, who works with Blum at the Sofienspital, is the recognized leader in Vienna. He has devised a urethroscope which can be used for both the anterior and posterior urethra, and gives excellent courses in the technic of these examinations.

In Vienna, gonorrhea is considered more in the province of the dermatologist than of the urologist, and the great majority of the acute cases especially, go to the dermatologist. To suit better the convenience of the patients, there is a dispensary hour at 5:30 p. m., and a very large venereal material can be seen at that time at both the Finger and Riehl skin clinics.

A man wishing to do original work along any line can easily command the necessary facilities and secure hearty cooperation.

Postgraduate work in Berlin has suffered greatly during the past year on account of the strained economic and political situation of Germany. The American Medical Association of Berlin has been organized for a number of years, but its position is a weak one, many of the Americans working in Berlin not being members. Many Americans have been going to Berlin for the express purpose of securing operative experience, and it is possible to actually do major operative work under good supervision, upon payment of fees ranging from three to five dollars per operation. In view of the present disorganization in Berlin, the consensus of opinion seems to be that other types of work can be obtained just as well in Vienna or elsewhere, and under more pleasant conditions.

Budapest has many hospitals, and in the last year or two has made a direct effort to induce American physicians to come there and pursue postgraduate study. There is a large, well equipped urological clinic under Ilyes, at which a great amount of material is seen, and Americans are received into the clinic upon payment of a fee of one hundred dollars monthly. They are permitted to do a considerable amount of operative work, and it is chiefly for this reason that a considerable number of men have left Vienna for Budapest. Hungarian is the national tongue, but all of the educated classes speak German, and Americans who have gone there only able to speak English have found no difficulty in getting along.

Paris has two large urological clinics, that of Legeu, who is the successor of Guyon, at the Hopital Necker, and that of Marion at the Hopital Lariboisie. There is a great deal of postgraduate teaching done at these clinics but the proportion of Americans is relatively small. All work is given in French, and unelss a man has considerable command of the language, or is willing to spend the necessary time acquiring it, the amount of benefit he derives from these clinics is very problematical. The fees charged for courses in cystoscopy, cadaver surgery, etc., are very small in comparison with those in Vienna, but the groups are much larger, there being twenty-five to thirty men always present at the cystoscopic and urological clinic given by Marion on Tuesday and Friday mornings. Foreigners are not permitted to operate or assist at operations, that privilege being reserved for native Frenchmen.

PARIS LETTER

(From our own correspondent)

PARIS, *August 8, 1924.*

MEDICINE AND THE PRESS

There is one thing that the French papers do better than the majority of those in New York or London—they devote considerable space to medical matters and never fail to report the sittings of the principal medical and surgical associations. Yet they seldom go off halfcock and print accounts of discoveries under sensational headlines before the scientific world has had time to pass considered judgment on the matter. This is particularly the case with reports of events in France; when it is a question of discoveries abroad there is a natural tendency to follow the example of the newspapers in the home country of the discoverer. All of which means that American matters medical get almost as much space in the French press as does French medical news itself. It is to be regretted that daily newspapers should be prone to exaggerate the importance of items of medical information.

A PATHETIC INSTANCE

There came to my attention last year a pathetic instance of the harm that may be done by such exaggeration. The Paris correspondent of an American paper, in all sincerity it is to be hoped, cabled home news of experiments being carried out by a surgeon in the provinces in connection with cases of blindness brought about by war wounds. The surgeon in question had hope of success. The correspondent, adding zest to his story, spoke of realization rather than of hopes. The headline writer at home did his share in the embellishment of the report. And the result was that a doughboy, blinded in the war, came to France with a companion guide who sought enlightenment regarding a certain cabled dispatch from Paris, a clipping of which he jealously kept in his pocketbook. It was pitiful to be compelled to bring disillusion both to himself and to his charge.

REMEDIES FOR TUBERCULOSIS

The French newspapers, taught by experience, are particularly guarded nowadays in connection with announcements of remedies for tuberculosis. It is still reporting and discussing the recent statement by Professor Calmette, brother of the editor of the

Figaro shot down by Mme. Caillaux shortly before the war in 1914, and the seven eminent biologists who have been assisting him in his researches at the Pasteur Institute in Paris, of which he is assistant director. The gist of this statement has already reached America by cable. Nevertheless, it may not be out of place to draw attention to the care with which the researchers iterate and reiterate that they do not claim to have prepared a remedy for tuberculosis, but a preventive vaccine conferring immunity only on individuals who have not been previously infected—very young babes or very young animals. "B.C.G.," as the vaccine is designated, is the outcome of twenty years of research and of experiments on bovines, simians and humans. From fifty to sixty per cent. of the progeny of tuberculous parents have hitherto been doomed to die of the disease within the first two years of life; it is the hope of the discoverers of the vaccine that these infants may all be saved if inoculation be made at once, that is to say, before they are infected by their *milieu*. It is as well to repeat once more that Professor Calmette and his collaborators do not claim to have prepared a "cure." They lay stress on the fact that years of observation will be required before it is possible to assert that the vaccinated offspring of tuberculous subjects are thoroughly immune.

DISEASE ON THE INCREASE

The whole of France has reason to hope that Professor Calmette may be right, for tuberculosis is markedly on the increase since the war. Insufficient nourishment for the inhabitants of the devastated regions, the hardships of the trenches for the combatants, the housing crisis for infants are the principal factors responsible for such increase. Of course no houses were built during the war; since the Armistice virtually all the building has been done on the old battle front, where it was imperative that houses should be set up at whatever cost. Elsewhere, lack of labor and price of materials have handicapped builders. As a consequence many families are living in cramped quarters, for the most part unsanitary, and the number of cases of infantile tuberculosis received in the children's hospitals of Paris is increasing at an alarming rate.

SOME TUBERCULOSIS POINTS

For this and other reasons, tuberculosis is very much to the fore in French medical circles today; several old points of debate have been revived. There is a tendency on the part of some doctors to consider that statistics are swollen by the inclusion of pseudo-tuberculosis. Rist and Ameuille, for instance, incline to the opinion that there are fewer tuberculosis cases than is believed. In their view the only true cases are those of "open" or contagious tuberculosis; indeed they lay down this axiom: "There is tuberculosis only when the expectoration contains bacilli, and there is no tuberculosis when no bacilli are found in the expectoration." This is going back to Koch (1882) and the axiom is the premise for much argumentation. On the one hand, Rist and Ameuille qualify the second portion of their statement by adding that only when absence of bacilli in expectoration has been confirmed "by frequent and methodical examinations" should it be declared that there is no tuberculosis. While Professor Sergent, on the other hand, reminds the doctors that "the fact that no bacilli have been found in the expectoration of a patient does not signify that there have never been any or that there never are any." In other words, the old problem is ever present of the differentiation between tuberculosis of first inoculation (mostly infants) and tuberculosis of reinfection (constant in adults).

CONGRESS AT LAUSANNE

It happens that there has just been sitting in Lausanne (Switzerland) the congress of the International Union Against Tuberculosis, attended, among others, by Dr. Stephen John Maher, of New Haven, Conn. The delegates discussed the Koch bacillus in its every detail, with particular reference to the point whether there exists any real relationship between the said pathogenic bacillus and the para-tuberculous bacilli commonly met with in the most diversified *milieux* outside of tuberculous organisms. The French scientists at the congress were inclined to hold that laboratory experiments have furnished no formal proof of identity of species, or even of close relationship, between the two categories of microbes in question; generally speaking, the French view was that tuberculous contagion in man is produced only through the intermediary of the authentic bacillus and that the neighboring species, although related, have no real pathogenic power. Dr. Maher attracted considerable attention by his expression of the view that there exists in Nature or that it is possible artificially to create saprophytic forms of Koch's bacillus susceptible of transformation into virulent tuberculous bacilli. Dr. Maher affirms that it is possible for acid fast bacilli, one at least of which is naturally present in every human body, to be transformed into the true tubercle bacillus as a result of injury to the tissues or of irritation thereof.

STATISTICS CHALLENGED

This letter, already too long, could be made much longer and yet fail to treat of a tithe of the subject. For instance, Sir Robert Philip, reading at Lausanne a paper in such excellent French that it surprised greatly all the French speaking delegates, urged that consumptive cases must be sought for by those interested in preventing the spread of the disease instead of waiting until cases present themselves. And he gave figures concerning the British Isles. On this very point of statistics there is considerable controversy in France. Common sense tells us that statistics are utterly valueless unless the identity and capability of the statistician are given, together with his or her figures. (Incidentally, I may state from personal experience in the Army that, in many instances, figures, however official, may be rejected on principle. When you ask a doctor, at three hours notice, to supply statistics of the health of an entire garrison town for a period of twelve months or more, you cannot expect accuracy.) The French, ever logical, demand an international standard for the establishment of statistics relative to tuberculosis or any other disease if trustworthy comparisons are to be established. They incline to the opinion that diagnosis nowadays is too sweeping and that of the inmates of sanatoria too great a proportion consists, not of tuberculous but of pretuberculous subjects, who are not bacillus carriers and may never be.

LATIN AMERICA LETTER

(From our own correspondent)

CANAL ZONE, *June 1, 1924.*

SANITARY PROJECT AT GUAYAQUIL, ECUADOR

The Congress of Ecuador by a decree, enacted September 29, 1923, created a special sanitary board for the City of Guayaquil. This body has as its function the supervision of the paving of the streets and the installation of sanitary drainage and water systems, and replaces the Executive Power and the municipality in the contracts already let for works of a similar nature. The board, which consists of seven members, began its labors on January 1, 1924. It is authorized to contract a loan of £2,000,000 to be guaranteed by revenues set aside by Congress for this purpose. This project, in connection with the very excellent sanitary work which is being done by the National Health Officer, Dr. Wenceslao Pareja, will do much to advance the health of Guayaquil and improve economic conditions in Ecuador. Guayaquil, the principal port of the Republic, was once one of the great world centres of yellow fever. The disease was eradicated by Dr. M. E. Connor of the International Health Board, but bubonic plague remains and malaria is very prevalent at certain seasons of the year. Situated on the Guayas River, some thirty miles from its mouth, Guayaquil occupies a low plain which is drained with difficulty, particularly in the rainy season. This favors the propagation of the Anopheles mosquito, and hence the spread of malaria. The new project aims to make Guayaquil one of the most healthful ports in South America.

WATER SUPPLY FOR GUATEMALA CITY

The Acatán water works which were badly damaged by the earthquake of six years ago, are to be further repaired in order to improve and increase the water supply of Guatemala. The reservoir, which is eighteen kilometres from the source of supply, is to be connected with it by concrete piping. The water supplies of Acatán Las Minas and Pinula are to be carried to a large reservoir at Santa Faz. Iron piping will be used for water distribution.

GUATEMALA'S POPULAR UNIVERSITY

To combat illiteracy, improve social education, awaken initiative, and teach the principles of personal health, hygiene and sanitation, the Republic has founded the Popular University, to be situated in Guatemala City. The Minister of Public Instruction has selected two teachers to study in Belgium and one in the United State, in order to acquire new methods and ideas for adoption in Guatemala.

CHILDREN'S BUREAU FOR ARGENTINA

By Presidential decree there has been added to the National Department of Hygiene of Argentina, the Children's Bureau, to study infant mortality and diseases, the protection of motherhood, school hygiene, child homelife and child labor—in fact, everything relating to child welfare. It will also plan and stimulate the formation of social organizations for child protection and assistance, and coordinate all agencies having aims related or similar to those of the Children's Bureau.

LIMA TO BUILD CHILDREN'S HOSPITAL

The proceeds of a tax on alcoholic liquors will be used to establish and maintain the Children's Hospital, which the Society of Public Charities and the Child Welfare Society propose to build at Lima, Peru. On every litre, or fraction thereof, of native beer, wine or spirits, a tax of one centavo has been imposed by a law recently enacted by the National Congress. The tax on imported alcoholic beverages is two centavos a litre, and the fund for the new hospital is further augmented by a duty of ten per cent. on the quarterly payments of the municipal sales tax on liquor sold at retail. A similar law creates a special tax of forty centavos on every one hundred kilos of Portland cement imported through the Callao custom house. The funds thus raised will be used for building the Arzobispo Loaya Hospital. Upon completion of the hospital, the tax will be abolished.

LONDON LETTER

(From our own correspondent)

LONDON, *July 29, 1924.*

CONFERENCE ON INFANT WELFARE IN LONDON

The third English speaking Conference on Infant Welfare was held at Caxton Hall, Westminster, London, on July 1, 2, and 3, 1924. The president was the Rt. Hon. John Wheatley, M.P. The conference was preceded on Monday evening, June 30th, by an at home at the Forum Club, on the invitation of the Public Service Section which was largely attended, many overseas delegates being present, followed on Friday, July 4th, by visits to various child welfare institutions. More than seven hundred delegates, representing local authorities, child welfare institutions and governments of thirty different English speaking countries attended.

At the opening session on the morning of July 1st, the chair was taken by Dr. G. F. Still, chairman of the National Association for the Prevention of Infant Mortality and of the National League for Health, Maternity and Child Welfare.

The inaugural address was delivered by the Rt. Hon. John Wheatley, the Minister of Health. He said in part that the care of the mother was the first consideration. It was not satisfactory to find that there had been little reduction in the maternal mortality during the past thirty or forty years. It was a matter of grave concern to many competent observers of social life, and it was one which was engaging the closest attention of the Ministry of Health at the moment. There was no doubt that much of the mortality that obtained was of a preventable nature, and it was the duty of a conference of this kind to pool its experiences and opinions in a national and international effort to ascertain the means by which this prevention could be secured because the fact had to be borne in mind that it was not merely the mortality but the amount of suffering and of misery at present associated with motherhood.

The Ministry of Health hoped that one result of the School Medical Service which was now growing up would be to make young women and girls better fitted physically for the burden and task of maternity.

Book Reviews

THE HOSPITALS OF NEW YORK

The Hospital Situation in Greater New York. Report of a Survey of Hospitals in New York City by the Public Health Committee of the New York Academy of Medicine. Prepared by E. H. Lewinski-Corwin, Ph.D. With Illustrations. New York: G. P. Putnam's Sons, 1924. Pp. 356.

This volume represents the fruits of a survey of hospital services in the City of New York, conducted by the Public Health Committee of the New York Academy of Medicine. The study was undertaken because of the fact that although there has been a very rapid growth of hospital accommodations in the metropolis, it has been a growth unguided by a community policy concerning the need for further services and for the better adjustment of existing facilities to the requirements of the city. The magnitude of the investigation is evidenced by the fact that ten per cent. of all hospital beds in the United States are maintained in New York City in institutions varying in size from 25 to 1,830 beds; and that it costs thirty-five million dollars annually to maintain these institutions. Because of the scope and diversity of hospital services in New York, this survey is of value to all those interested in hospitals throughout the country.

An historical sketch of the development of hospitals in New York introduces the reader to the subject under consideration. In the following chapters every detail of hospital administration, and the varied relationships of the hospital to the community are discussed on the basis of facts gathered from a first hand investigation of the many institutions of the greater city. A wealth of material is presented which can hardly be touched on in a brief review.

Thirty-nine per cent. of the total hospital capacity of the city is found in the eighteen municipal hospitals; fifty-seven per cent. in the 114 privately endowed hospitals; and four per cent. in the fifty proprietary institutions. There are thirty-two thousand beds in all, or one bed to about every 175 of the population. The absolute number of beds is sufficient, but further analysis of the services offered shows that these beds are not all used to the best advantage. For the year 1920 the average utilization of hospital beds in the general hospitals was 70.6 per cent.; the privately endowed hospitals had an average of 73.2 per cent., and the municipal 67.3 per cent. New York has a large and heterogeneous accumulation of hospital services more or less suited to the needs of the community, but inelastic in their organization, not fully adjusted to meet the economic status of the several classes of the population, and for the most part not coordinated with existing hospital facilities in the city as a whole. Thus while certain classes of patients are well provided for, for others such as neurological cases and most chronics the accommodations are insufficient and often inadequate. There is no provision whatsoever for a psychopathic diagnostic hospital.

Such a situation calls for intelligent planning and cooperation. A part of the existing municipal hospital accommodations could profitably be diverted and equipped to meet some of these wants. At present the city is competing with the private hospitals and withdrawing a good part of the financial support which it has given in the past to the private institutions. There is sufficient opportunity for service for all of the existing institutions if they cooperate in defining the scope of their work.

The reviewer has chosen this phase of the hospital problem as one of the most interesting ones. A careful perusal of the book will throw light on many other matters, and should provoke much stimulating thought. Thanks are due to Dr. Corwin for his vast labor in compiling all of this information, and presenting it in a readable and attractive manner. The book is well printed and bound and has many interesting illustrations and graphs.

TROPICAL DISEASES

Handbuch der Tropenkrankheiten. Unter Mitworkung von Prof. Dr. U. N. Brahmachari. Herausgegeben von Prof. Dr. Carl Mense-Kassel. Dritte Auflage. Erster Band. Mit 341 Abbildungen im Text, 7 schwarzen and 5 farbigen Tafeln. Leipzig: Verlag von Johann Ambrosius Barth, 1924. Pp. xviii-713.

To those interested in tropical diseases the third edition of this manual should be a source of joy. It is the most complete and up to date manual on the subject. In the first volume A. Eysell treats the subject of the activity of arthropods, first as carriers of disease and then as cause of disease in the human being. Every form of this type of animal life is discussed in detail, including their anatomy and habits of life and their special characteristics, which aid in their recognition. In the second part of the book V. Schilling discusses the application of hematology to tropical diseases in all its branches from the taking of the blood from the patient to the interpretation of the blood findings. The bibliography is most comprehensive and includes the literature of the world. The illustrations are very numerous and well selected and the colored plates are works of art. The authors and publisher are to be congratulated on the production of this work as it leaves little, if anything, to be desired.

NOSE, THROAT AND EAR

Diseases of the Nose, Throat and Ear for Practitioners and Students. Edited by A. Logan Turner, M.D., F.R.C.S., et al. With 222 illustrations in the text and twelve plates, of which eight are in color. New York: William Wood and Company, 1924. Pp. 413.

The difficulties encountered in presenting a special subject to the general medical reader in a popular and easily comprehensible way are many and various, and we know of but very few writers who have successfully overcome them. The authors of the present volume, which is a rewritten and reconstructed work of a presumably popular book in England whose former author died in the service of his country, have to a great extent succeeded in meeting the requirements that the general practitioner will demand of his textbook on a specialty: clarity of exposition, avoidance of nonessentials, and treatment of those affections which he is most likely to meet in his daily work. The problem of compressing within the space of four hundred pages all

that may be of interest to such a reader, in the domain of the ear, nose and throat, had been solved by alloting sufficient space to subjects that are of comparatively frequent occurrence, and by treating items that are of interest only to the specialist in a short, concise and terse manner. Thus the various sinusites, the importance of which in the pathology of the ear, nose and throat is gradually coming to be recognized at the present day, are justly treated in an exhaustive and thoroughgoing manner, and the same may be said, though to a somewhat lesser degree, of the subject of the tonsil, its inflammation and surgical treatment, that of tuberculosis of the larynx, of diseases of the external meatus, which usually fall first into the hands of the general practitioner, acute and chronic middle ear suppurations with their consequences, and so on. An interesting feature of this work is an illustrated clinical anatomy of the respective regions which the editor hopes will enable the student to obtain all the information which he may desire upon the applied anatomy of the different organs. We were among other things particularly impressed by the chapter on the physiology and functional examination of the ear, where these somewhat complicated subjects are taken up and elucidated in a clear and practical manner.

We can heartily recommend this book, not only to the general practitioner who wants to keep abreast of new advances in the field of the ear, nose and throat, but also to the specialist who is sure to peruse its well written pages with pleasure and profit.

MAYO CLINIC PAPERS

Collected Papers of the Mayo Clinic and the Mayo Foundation. Edited by Mrs. M. H. Mellish. Volume XV, 1923. Published June, 1924. 410 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924.

This volume marks a departure in the method of presenting the work of the Mayo Clinic in the form of wellknown *Collected Papers.* The number of articles published annually from the Clinic has become so large that in recent years it was found necessary to omit some of them entirely from the volume of reprints. The present volume, however, contains all the papers either in full, abridged, or by title. It is therefore a complete and accurate guide to the work done in this leading medical centre. The papers mentioned by title only are those of less general importance or interest.

The 1923 volume is the work of 148 contributors from the Mayo Clinic and the Mayo Foundation. The subject matter is presented under nine main heads. The alimentary tract leads all other subdivisions with fifty-two papers. The next largest subdivisions are urogenital organs; and head, trunk, and extremities, each with thirty-two papers. The blood and circulatory organs are represented by twenty-four papers and the ductless glands by twenty-one papers. The other general subjects covered are: Brain, spinal cord, and nerves; skin and syphilis; and technic. There are also twenty-two papers in a group labelled general miscellaneous. Here are included articles on medical education, medical organization and hospital administration and management.

It is impossible in reviewing a book of this size (it contains 1420 pages and 209 separate papers) to mention in detail any special articles. Suffice it to say that the topics selected for presentation are of the widest diversity and of great interest and value to all physicians. Even the human side of practice is not forgotten as is seen in the somewhat sentimental title, How Is the Overworked General Practitioner to Use Insulin? The volume is completed by an excellent bibliographic index and index of subjects.

MATERNITY NURSING

Maternity Nursing in a Nutshell. By Elizabeth H. Wickham, R.N. With Twenty-eight Illustrations. Philadelphia: F. A. Davis Company, 1924. Pp. viii-167.

This is a handy little reference book which easily fits into the nurse's obstetrical bag, to be used in an emergency. Its chief value lies in the many practical hints that are of value to the nurse in charge of an obstetrical case. The important points in prenatal nursing care, dressing and outfits, preparation for delivery in the home, delivery by the nurse, postpartum care of the mother, care of the baby, infant feeding and on complications of the puerperium are well brought out and duly emphasized. An appendix contains some helpful hints and also tables of measurements. A glossary is also added.

WEIGHT CONTROL

Eat Your Way to Health. A Scientific System of Weight Control. By Robert Hugh Rose, A.B., M.D. New Edition. Thoroughly Revised and Enlarged. New York: Funk and Wagnalls Company, 1924. Pp. 230.

This little book is of value because it contains detailed menus of three kinds: for weight maintenance at any given level, for weight reduction, and for weight increase. Under each group menus are given every day for two weeks for both summer and winter. The calories of each portion are indicated as well as its content in the principal vitamines. The text is clear and sensible and includes complete height-weight tables for both sexes. The book can safely be recommended to the laity and should prove helpful to the physician who prescribes diets as a part of his daily routine.

COSMETIC SURGERY

Cosmetic Surgery. By Charles Conrad Miller, M.D. With 140 illustrations. Philadelphia: F. A. Davis Company, 1924. Pp. 263.

If one approves of cosmetic surgery this seems about the best treatise that has been produced. It is very well illustrated with drawings and adequate descriptions. The reviewer believes that certain types of cosmetic surgery are justified if the patient so desires. There is no question that in any type of cosmetic surgery about the face there is a certain risk, but if the patient understands this and is willing to take it in order to attempt an improvement in personal appearance, the procedure is justified.

MICROBES

Fighting Foes too Small to See. By Joseph McFarland, M.D., Sc.D. Philadelphia: F. A. Davis Company, 1924. Pp. 309.

This book seems to have accomplished in almost the ideal way the discussion of a technical subject without sacrificing scientific accuracy for popularity.

ANATOMY OF BONES AND JOINTS

A Descriptive Atlas of Radiographs of the Bones and Joints for Students and Practitioners. By A. P. Bertwistle, M.B., Ch.B. With 299 Illustrations, All Radiographs. New York: William Wood & Co., 1924. Pp. 197.

This work gives a complete view of the normal and pathological anatomy of the bones and joints. It lacks only the almost microscopic details of structure which can only be obtained in actual photographic prints. Two hundred and ninety-nine of these would make a costly volume. And except in a few cases what might be called the gross pathology demonstrated in this book is ample.

The radiographs themselves are strikingly effective; the bones are black or gray, the flesh white, silhouetted upon a black background. This effect is recommended for photographic prints when the negative cannot be sent to the surgeon. Upon the negative the outline of the flesh is scratched, on both sides if the film is double coated, and the resulting print shows the gray or black bones with a black line marking the outline of the flesh. Beyond this the background of the print is filled in with India ink. The bones stand out unusually well and the silhouette of the flesh answers many purposes of an ordinary photograph.

An ample diagnostic note accompanies each radiograph. The paper is excellent and the screen employed in making the illustrations is so fine as never to be noticeable and is only discoverable by the closest scrutiny.

Among the radiographs are a complete series of normal ones; also fractures, dislocations, deformities, complications of amputation stumps, atrophy, myositis ossificans, syphilis, tuberculosis, tabes, tumor, and many others. The surgeon certainly needs such a guide and this book is to be highly recommended. The fine glossy paper, brilliant black ink and exceedingly fine screen make this the best large collection of half tones of radiographs the reviewer has seen.

SURGERY

Surgery of the Spine and Extremities. By R. Tunstall Taylor, M.D., F.A.C.S. With 604 Illustrations. Philadelphia: P. Blakiston's Son & Co., 1923. Pp. X, 550.

The author of this volume has admirably carried out his purpose in preparing a practical work for those who are engaged in the field of orthopedic surgery. It not only presents the subject in a practically concise manner for one who would survey the field briefly or for the student who would first enter it, it is also, as the author intended, of great value to those who must intelligently assist the surgeon here. Taylor writes with the authority of one who has a comprehensive knowledge of his subject from long familiarity with its practical phases. He broadly considers it in the light of its widest relationships in etiology, pathology, and the possibilities of readjustment and reconstruction. He enters carefully into the difficulties and the mistakes that may arise in the application of appliances as into the various therapeutic possibilities of any of the surgical procedures undertaken. There is a brief definition of orthopedic surgery together with a review of its history from ancient to modern times. Space is given to the discussion of various forms of apparatus and their preparation. The greater part of the book is devoted more definitely to spinal disorders and to other special disorders such as infantile paralysis, various muscle syndromes, joint disorders, etc. The author has endeavored to put into this concise practical form the wealth of material which has been developed in this field through the impetus of the late war, as well as through the steady advance in methods which belongs to the normal progress of the day. The author's own experience has contributed its share in this advance. He has here made available much that will increase the equipment of the student and the worker in this field. The many illustrations bring the matter of the text to an even more applicable form of clearness.

HYSTERIA

Uber Hysterie. By Dr. Ernst Kretschmer, Privatdozent für Psychiatrie in Tübingen. Leipzig: Georg Thieme, 1923. Pp. viii—115.

Kretschmer's new study of hysteria presents the subject in its dynamic nature. It takes the view of some hidden purpose driving to instinctive rather than rational reactions and thus making use of ancient phylogenetically prepared pathways. The reaction is childish, primitive, yet it takes place in a complex civilized human being and therefore cannot be as simple as in the animal or child. A complicated mechanism must intervene to make possible the carrying out of the hidden purpose in all its dominance over the higher will. Kretschmer has examined this mechanism in detail in relation to the manifestations so common as a result of war shock as well as in peace hysterias. He believes that there is a period when a primary reaction to the trauma, such as tremor, is slightly strengthened voluntarily but that this is soon veiled from the patient and then the situation, aided by repression, becomes "objectified" in a form which seems to be entirely beyond the patient's control. Kretschmer also follows out the more elaborate psychic complications which build themselves over this mechanism thus simply stated and through which the patient obtains a compensatory substitute for the reality he has feared and rejected or by which he more directly defends himself against. Kretschmer sees in hysteria this intrinsic defense reaction. He is not ready to follow Freud all the way in the extension of the term sex and in the psychoanalytical recognition of the unconscious content operative in hysteria. Yet in general principles his view is much the same.

THE LACUNAR SYSTEM

Aperçu de la Physiologie dt de la Pathologie générales du Système lacunaire. Par Ch. Achard. Paris: Masson et Cie, 1924. Pp. 124.

The author of this monograph groups together under the terms "lacunar system" the aggregate of unconnected cavities in which is enclosed the greater part of the fluid of the body. In both ontogeny and phylogeny, this system precedes in its appearance the blood vascular and lymphatic systems, which, as a matter of fact, are merely auxiliaries to the lacunar system. In man, this system comprises the intercellular spaces, connective tissue spaces, subarachnoid spaces, the humors of the internal ear and eye, and all the serous cavities, large and small. The author presents a study of the formation of serous fluids,

he nutritive rôle of the lacunar system and the relationship of proper physicochemical stability of the acunar fluids to the activity of tissue cells. The effects of inflammation and other morbid states on he lacunar system are also discussed. From the herapeutic viewpoint, the action of various measures through the intermediation of the lacunar system is explained, especial attention being paid to the influence of restriction of salt and of water on this system. The latter measures, the author holds, are based wholly on the physiology of the lacunar system. A number of clinical observations and diagrams are adduced to illustrate the value of a more precise knowledge of the lacunar fluids in the treatment of disease. Analyses of the various fluids are presented in an appendix. This monograph cannot fail to be suggestive and interesting to all who are engaged in the clinical or pathological study of renal or hepatic diseases or of the metabolic diseases.

ATLAS OF MALE BODY

Baillière's Popular Atlas of the Anatomy and Physiology of the Male Human Body. By Hubert E. J. Bliss, M.A., M.D., Cantab., D.P.H. Third Edition. Plates by Georges M. Dupuy, M.D. New York: William Wood and Company, 1924.

This is the third edition of this popular atlas. The plates, which are by Georges M. Dupuy, are preceded by a description of the anatomy and physiology of the male body by Hubert E. J. Bliss, and a guide to the plates. The atlas is printed in Great Britain.

The eight sets of plates, the majority of which are in colors, include the usual groupings of the organs of the human body: Bones, muscles and articulations, viscera, vascular, nervous, and respiratory systems, the eye, the ear, urinary and genital organs, and prominences and motor points of nerves and muscles.

The plates and charts are exceptionally clear and detailed as is characteristic of British medical reproductions. Bliss's prefatory essay on the male human body is complete without being involved or too detailed, and is written in a clear and interesting manner.

PATHOLOGY OF THE RESPIRATORY APPARATUS

Nouveau Traité de Médecine. Fascicule XI Pathologie de l'Appareil Respiratoire. Paris: Masson et Cie., 1924.

This is Fascicule XI of a new treatise edited by the leading clinicians of the French faculties of medicine of Paris, Lyons, Nancy, and also by a few distinguished graduates of the Paris school now residing in foreign countries. The twenty-two volumes, covering the entire field of medicine, are published under the direction of Professors G. H. Roger, Fernand Widal and P. J. Teissier, all three of the Paris faculty.

The volume before us treats of the respiratory apparatus, that is to say, the nose, larynx, trachea, bronchial tubes and the lungs. This book is divided into six chapters: Bezancon and de Jong describe first the entire symptomatology of the respiratory apparatus; Bourgeois speaks of the pathology of the nose and larynx; Bezancon and de Jong of the trachea and the bronchial tubes; Hutinel and Paisseau of bronchopneumonia, and Hervier of the pathology of pulmonary congestion, acute oedema, gangrene, abscesses, and lobar pneumonia, embolism, pneumoconiosis and atelectasis of the lungs. Lastly, Ribadeau Dumas describes the neoplasms of the pleura and lungs and hydatic cystes.

Numerous illustrations and a number of beautifully colored plates and also some x ray photographs make the volume an unusually valuable one for the student, the general practitioner and also the specialist. All that is known up to date of the etiology and pathology, and perhaps also of the treatment, can be found in this book written by men of large experience and acknowledged as authorities. The only important omission in the therapeutics of bronchiectasis and lung abscesses the reviewer could find was the important advancement in the management of such cases by the use of the bronchoscope. When one has seen the results obtained by Chevalier Jackson, of Philadelphia, and his disciples in the treatment of bronchiectasis and lung abscesses, one cannot help regretting that our French colleagues in their latest treatise on the subject have failed to mention this new valuable method in washing out the bronchiectasic cavities and cleaning of abscesses. Aside from this criticism one may well consider Volume XI of the *Nouveau Traité* as complete a contribution to the subjects mentioned as is possible with our present knowledge.

MICROBIOLOGICAL TECHNIC

Handbuch der mikrobiologischen Technik. Band II and III. Edited by Dr. Rudolph Kraus and Dr. Paul Uhlenhuth. Berlin and Wien: Urban & Schwarzenberg, 1923 and 1924.

Volume II is devoted to special technics regarding bacterial cultures, staining methods, and chemical products. One section deals with the bacteriophage problem. Among other topics of interest treated are the physicochemical foundations of microbiological methods, a long chapter on the detection of infectious diseases from the point of view of the veterinary surgeon, another on the methods of infecting and testing animals, rules for the conduct of bacteriological laboratories, methods of shipping cultures, and suggestions as to the proper way of removal or incineration of dead animals.

Volume III is concerned with moulds, filterable organisms and viruses, directions for the cultivation, preparation, and study of insect vectors, and strange to say, twenty pages on the methods of investigating tumors. One chapter is on the general arrangement of microbiological institutions, including mobile laboratories, with examples drawn from the American field equipments which were used during the war.

INSTRUCTIONS FOR THE SURGEON'S ASSISTANTS

The Operating Room. Instructions for Nurses and Assistants. By the Staff of St. Mary's Hospital, Rochester, Minnesota—The Mayo Clinic. With 144 illustrations. Philadelphia: W. B. Saunders Company, 1924. Pp. 165.

This is a little book published by the Mayo Clinic for the purpose of instructing nurses and assistants in the operating room procedures. It is a handy volume as it gives the routine instruments and preparations for various standardized procedures.

PHYSICAL FREEDOM OF WOMEN

Woman's Physical Freedom. By Clelia D. Mosher, M.D. New York: Woman's Press, 1924.

The author of this interesting little book is associate professor of hygiene and medical adviser of women at Stanford University. The theme of her book is that any healthy woman's lessened efficiency is probably due to some anatomical handicap that can usually be compensated for by certain regular practices and exercises. Her treatment of the subject includes discussion of the menopause, dress and personal habits, the psychic side of periodical and chronic invalidism, and a good deal of excellent advice, rather dogmatically put.

The treatment of the subject is distinctly for the lay person and so nontechnical in style, but Dr. Mosher writes from a truly scientific basis and with a wholesome and refreshing clarity and frankness. The book is not at all theoretical, but the result of her own personal application of hygiene and medicine to practice among women.

THE DOCTOR IN FICTION

The Avalanche. By Ernest Poole. New York: Macmillan Co., 1924.

Our chief quarrel with this book, which is on the whole not as distinctive a product as Mr. Poole's other works, is that the author has allowed his hero to fail so miserably in his profession. Granted that the emotional bond between Llewellyn Dorr and wife Dorothea, blinds them both to a degree, nevertheless they realize her pathological condition and have easy access to its cure. Naturally her husband cannot treat her, but any psychoanalytic husband with a wife whose vagaries threaten his life and happiness (as well as hers) should be able to induce the wife to visit some other analyst.

The lady in question is selfseeking. Her only happiness lies in being in the thick of some activity that is going to cover her personally with glory. She takes up the brilliant young doctor as a diversion from the problem she is trying to avoid, a decision concerning her future life. The owner and editor of *The Chronicle,* the man whose life corresponds with the heart of her interests, is impatient for his answer. She has held him off interminably, until she is exhausted with indecision. The realization that she will have to share, is, we believe, the barrier beyond which she cannot go. She wants to be in the spotlight entirely. As the editor's wife, the paper and the man himself will invariably be dragged into any triumphs she may have.

Young Dorr cures her of the breakdown resulting upon this crisis. They are "intrigued" by each other. And presto, Dorothea, who thought life held no more novelties for her, is off on a new track. They marry. Promoting the doctor offers a big field. She feels she can raise him to her snobbish level if she pushed him the way she and *The Chronicle* between them can. The man being a true scientist, rebels, but it is too late. The avalanche has been let loose. It buries him. Dorothea escapes, unscathed as is the way with selfcentred people, and the patient editor wins her in the end.

Life is like that of course. The mischief makers never seem to draw their deserved punishment. The fools who mean no harm invariably get the better of honest effort, genius. And genius is especially prone to nourish its own narcissistic strain, to take mistakes too hard, and to give up life rather than admit defeat and start again.

The *deus ex machina* in the doctor's case is a war weakened heart. The strain of the ordinary professional life might have brought the end at any time. Only his marvellous will pulls him through the long bout of psychic strain of the peculiarly senseless life he lets Dorothea lead him. When the last incentive to live is lost, he passes mystically out of the picture, paying her narcissism a final tribute. He could not live without her!

There are numerous warnings to be gleaned from this book. One is "Don't marry a genius." Another is "Don't marry a restless society striver." Altogether it is a series of "don'ts." We wish the time would come when authors would not make Death the only thing to "do."

Medicoliterary Notes.

The Nobel prize winner in physics this year was Prof. Calvin S. Page, of Chicago, for his book entitled *Rex, the Life Atom.* In his book Professor Page turns the gravitation theory inside out, maintaining that instead of attraction there is antipathy among physical elements. He explains radio vibration as "superlight" or as color beyond the visible spectrum. In his theory of a universe, sound is also light, there is no ether, the orbits of the planets are not elliptical but circular, and there is no gravitation but, instead, repulsion.

* * *

The New York Botanical Garden has received the most important collection of books on botany and horticulture that has ever come to this country from Europe. It was purchased from the Geneva Botanical Garden, and includes five thousand bound volumes and many more pamphlets and unbound works.

* * *

The Ethics of Opium is the title of an interesting and valuable little book by Ellen N. La Motte, recently published by the Century Company. Miss La Motte has devoted many years of her life to investigating and fighting the drug menace and the purpose of her present book is evidently the exposition from authentic sources of the international situation as well as of conditions in the individual countries. She has presented for our consideration an impressive mass of facts, statistics, accounts of conditions, and other data. Her main contention is that there is only one way in which the menace can be ended—reduction of the amount of raw material produced to the bare limits of what is needed for purely scientific and medical uses.

* * *

The History of Human Marriage by Westermarck, originally issued in three volumes, has been abridged and revised and will be a forthcoming publication of Macmillan. It will be in one volume and has been put in more popular form than previous editions.

* * *

The menace of the critic, if there is one, to the popularity of theatrical productions, has apparently been partly solved at least by French managers and producers. During the past season the general public has been given the first taste of the new plays and a chance to manifest pleasure or displeasure independently of newspaper criticisms. Invitations to critics are not sent out until after the third or fourth performance.

* * *

Charles Darwin once set a musician to play in his greenhouse to ascertain whether music affected plants.—*Havelock Ellis in The Dance of Life.*

* * *

The Playground and Recreation Association of America has recently issued with Macmillan as publisher an interesting handbook on summer camps and camping entitled

Camping Out; a Manual on Organized Camping. There are chapters on all the problems of summer camping written by authorities on the various subjects. The book should be of unusual value to camp organizers and directors.

* * *

One of the best novels of American life published in recent years in Edith Kelly's *Weeds.* It is a realistic yet sympathetic study of the life of the socalled "hill-billies" of the Kentucky and Carolina foothills, a region and people that have been usually written about either in a sentimental vein or from the point of view that they are objects of charity. Miss Kelly shows them as they are.

* * *

Many an American advertiser has come to grief by not knowing what the English call things. . . . Don't ask for a drug store if you are taken sick in England or you may be suspected of being a drug fiend. . . . A drug store in England is a "chemist's shop." A "store" isn't a store, it is a warehouse. Drygoods are not sold in drygoods stores, they are sold in "draper's shops," and they aren't called drygoode either, they are "drapery" or "mercery." Candy isn't candy, it is "sweets" or "lollies"; peanuts are "monkey nuts"; a monkey wrench is a "spanner"; suspenders are "braces"; wood alcohol is "methylated spirits"; cotton is thread, not raw cotton. When an English business man telephones, he doesn't say "hello"; he says, "Are you there?" He uses cheques, not checks. He calls a chiffonier a "chest of drawers." A dresser is not a dresser but a piece of furniture on which to put china and plate, after it has been "washed up" in the kitchen. If he sells spinach, he is a "green grocer"; if he deals in chickens, he is a "poulterer." —*New York Times.*

* * *

A very entertaining little book is *Magic for Amateurs,* by W. H. Radcliffe (Appleton). About fifty tricks are explained and illustrated, such as how to make an "enchanted cabinet," "mental telepathy," "spirit" slate writing, and how to juggle entertainingly with cards, eggs, toothpicks, and matches.

* * *

The University of California has taken a step toward correcting the "divorce evil," if such it be, by instituting a course in critical analysis of the home. Miss Mary Burt Messer, formerly of the sociology department of the University of Wisconsin, is director of the course. Miss Messer has been quoted as saying that the troubles of American home life fall into two main categories: "the belief on the part of the modern young woman that she is indifferent to the ties of love and of home"; and "the insufficiency of the home itself, its mediævalism and inability to meet the needs of the present day man, woman, and child."

* * *

Lucien Fabre, who has been called the twentieth century Balzac because of his brilliant style, has been awarded the Goncourt prize for his novel *Rabeval.* M. Fabre is not a writer by profession, but began life as a factory hand. Later he became an engine driver, and adopted this as a profession. Recently he has been working with an aviation firm. His novel is in three volumes and describes the gradual development of the boy of a Parisian laborer into a great financier.

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A scientific worker has recently suggested that all motor gasoline be colored red to distinguish it from other fluids for which it is frequently mistaken, thus causing explosions, fires, and sometimes loss of life.

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The Smithsonian Institution, it is reported, has recently accepted for its archives some moving picture films with the understanding that their seals are not to be broken until the year 6,924, a period of five thousand years.

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Benjamin Franklin was the inventor of bifocal spectacles. In a letter to a friend he describes a pair made for him before 1785 by the famous London optician, Dollard.

* * *

Albert and Charles Boni have announced that one of their early fall publications will be a hobo autobiography by Jim Tully, entitled *Beggars of Life.*

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Three very revealing studies of the younger generation in Europe were quoted in the *Living Age* recently. These are an account of how the French girl faces marriage, by Marcel Prévost, from *Figaro;* comments on the new generation in Austria, by Bertha Pauli, from the Vienna *Neue Freie Presse;* and an account of the New German Youth Movement, by Meyrick Booth, from the London *Nation and Athenaeum.*

* * *

Reading Gaol, the prison immortalized by Oscar Wilde's *Ballad of Reading Gaol,* is to be demolished to make room for modern apartment houses. It was in this jail that Wilde was imprisoned and where he wrote *De Profundis.*

* * *

A recent English publication of interest is entitled *Love Letters of Great Men and Women,* collected, translated, and arranged by C. H. Charles in groups of countries, periods, régimes, etc. The book has an entertainingly written preface on the lost art of letter writing, and the qualifications of the ideal love letter. The writer believes that the art of writing love letters is a lost one, and proposes that we try to revive it by instituting courses in the schools.

* * *

As a tribute to the activities of the American Relief Administration, the word "ara" meaning to "give in love and charity" has been incorporated into the Russian language.

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The *Yale Review* for July contains a number of articles of unusual interest, among them The Feminine of Genius, by Clemence Dane, a discussion of whether or not woman is capable of genius; a study of Byron and his poetry by Howard Mumford Jones; Are Acquired Characteristics Inherited? by T. H. Morgan; Locking the Barn Door, a discussion of marriage especially for the young and unmarried, but of interest to all; and an unusually full book review section.

* * *

Recent novels that make interesting reading are: *Black Laughter* by Llewellyn Powys, sketches of the life led by African ranchers; *Nightshade* published anonymously by Dutton, a frank but understanding story of American small town life; *The Wrath to Come* by E. Phillips Oppenheim of interest to those who like his frantic plots and sensational style; *Waste* by Robert Herrick, dull in spots but interesting as a whole as an honest and understanding portrayal of life during the last half century in the United States: *La Dame de Sainte Hermine* by Grace King, a story of the growth of New Orleans; *Back Stage* by Roland Oliver, playwright, a story of a theatrical company of Greenwich Village; *My Life,* a small book purporting to be an autobiography, but by some thought to have been written by Tolstoi; the story was supposedly told by a Russian peasant woman to Tolstoi's sister-in-law, who took it down as the woman talked, and gave the manuscript to Tolstoi to edit; *Wandering Stars,* a mystical tale by Clemence Dane well done but not up to her usual standard; *Epithalamium* by Jacques Chardonne, which won the Northcliffe Prize and which is an exquisite picture of married life translated from the French (Doran); *Roughneck,* a typical novel by Robert W. Service; *Isle of Thorns* written in Sheila Kaye-Smith's characteristic style; *Gold* by Jacob Wassermann, the story of a masterful German woman who dominates two generations of a Viennese family; *Impromptu* by Elliot H. Paul, an exposition of the sometimes abnormal psychology of the returned soldier, which opens with tremendous strength and beauty but unfortunately descends toward the close to a long drawn out case study of a syphilitic; *The Singing Season* by Mrs. Isabel Patterson, an excellently written romance of life in Cordova; *The Two Coyotes* by David Grew, the story of a Western hermit nicknamed "the Coyote" and of a real coyote; *Soul Enchanted* by Romain Rolland, the study of a woman's life in three volumes, like *Jean Christophe,* of which the first volume was published this summer; *Redcliff* by Eden Phillpotts, a story of the Devonshire coast; and *Balisand* by Joseph Hergesheimer, *The Tatooed Countess* by Carl Van Vechten, *A Pilgrimage* by Johan Bojer, *Blind Rafferty* by Donn Byrne, *Men, Maids and Mustard Pot* by Gilbert Frankau, *East of the Setting Sun* by George Barr McCutcheon, *Anthony Dare's Progress* by Archibald Marshall, *The Priceless Pearl* by Alice Duer Miller, *Golden Ballast* by H. de Vere Stacpoole, and *The Coming of Amos* by William J. Locke.

Abstracts from Current Literature

SYPHILIS

Abortive Treatment of Syphilis.—R. Pollard (*Wiener klinische Wochenschrift,* February 14, 1924) states that the only effective abortive treatment of syphilis is salvarsan, best combined with mercury, or in the form of silver salvarsan. The author's statistics do not indicate whether in the combined treatment the intramuscular administration of mercury or the socalled mixed injection is preferable. If the treatment is begun after the lapse of three weeks after the infection, a cure can be expected in only ninety per cent. of the cases. After four weeks a cure can be expected only in seventy-five to eighty per cent. of the cases. After five weeks only fifty to sixty per cent. of cases are possible, and after six weeks only about forty per cent. of the cases are cured. A positive Wassermann reaction at the beginning of the treatment does not necessarily prevent a cure and besides the prognosis is not markedly made worse if the disease has lasted only a short time. Reversely, relatively frequent failures occur in beginning seronegative cases. A persistently positive Wassermann reaction is not always a sign of incurability, especially if no clinical signs or symptoms were ever present. Such an occurrence may be explained by the fact that in certain individuals having marked powers of resistance the formation of immune bodies persists longer than the duration of the disease, sometimes throughout life. It has been shown that positive cases have become negative after eight to nine years. The author has never observed any unfavorable effect upon the course of the disease as a result of abortive treatment, but only the future can show whether late recurrences will appear after years. The author believes that he can already say that such an occurrence will be rare.

Experimental Observations on the Cure of Syphilis in the Rabbit with Arsphenamine.—Alan M. Chesney and Jarold E. Kemp (*Journal of Experimental Medicine,* April, 1924) report experiments which show that the administration of arsphenamine intravenously to rabbits in doses of ten mg. to the kilo to the extent of six doses spaced at intervals of one week is sufficient to eliminate an existing syphilitic infection, as judged by lymph node transfer performed thirty-two to thirty-eight days after cessation of treatment, even if the infection has been present for a period of 127 days when treatment is begun. The syphilitic rabbits that have been treated in this way and whose popliteal nodes thirty-two to thirty-eight days after treatment have been shown to be incapable of transmitting the infection to normal animals are, as far as can be judged by the absence of a local lesion, refractory to a second inoculation of active virus of the same strain, if the inoculation be made intradermally at the base of the ear, and carried out 209 days after the first inoculation. This is also true of untreated syphilitic rabbits. The authors believe that the demonstration of presence or absence of a lymph node infection affords a better criterion for the evaluation of an antisyphilitic agent than does the method of reinoculation. They also point out that failure to reinoculate treated syphilitic rabbits does not necessarily indicate the presence of infection in the latter, but may, on the other hand, indicate the existence of an acquired immunity.

Uterine Syphilis.—J. T. Windell (*American Journal of Surgery,* March, 1924) reports on two cases and reviews the literature with the following comments:

The spirocheta pallida may avidly attack every organ, tissue or structure embraced within the human economy, and the uterus and its adnexa are not exempt. Until comparatively recent years, however, the strange impression prevailed that the endometrium was immune to spirochetal invasion; that such impression was erroneous there is now abundant evidence.

The treatment of uterine syphilis has already been sufficiently discussed. It differs in no essential respect from the therapy of luetic infection involving other organs and tissues of the body. Rapid subsidence of symptoms is the rule and the patients are at least clinically cured.

From a clinical viewpoint the question of socalled syphilitic hemorrhages is perhaps of the greatest interest. The practice of attributing symptoms which disappear under antisyphilitic treatment, in patients exhibiting a positive Wassermann reaction, to a syphilitic origin is at least open to scientific doubt. Probably the uterine hemorrhage in many cases is properly attributed to syphilis, but, on the other hand, with a disease so common as syphilis, and considering the numerous and often obscure nonsyphilitic lesions that may cause hemorrhage, it is but reasonable to assume that combination of these may occur and hemorrhage in some instances may be the result of disease totally unrelated to luetic infection.

The clinical diagnosis of luetic uterine involvement is seldom made in the early stages of the disease. In the majority of instances no history of primary or early secondary lesions can be obtained and when observed the patient may exhibit no symptoms to suggest that the internal genital organs be thoroughly investigated. Local examination in consequence may be delayed until supervention of profuse vaginal discharge, menorrhagia or metrorrhagia. The Wassermann reaction is then positive and spirocheta pallida can usually be demonstrated in the infected tissues and their excretions. However, the diagnosis of uterine lues seems warranted even where no spirochetes are demonstrable when the Wassermann reaction is positive and clinical signs exist. The diagnosis is further confirmed by the therapeutic test, i. e., the subsidence of clinical manifestations after antisyphilitic treatment. Routine Wassermann tests on all women with gynecological affections would probably demonstrate the presence of luetic infection in a greater number of instances than hitherto suspected. It must be remembered that syphilis is not infrequently coexistent with other diseases.

Colloidal Benzoin Reaction in the Cerebrospinal Fluid.—J. A. Braxton Hicks and John Pearce (*British Medical Journal,* February 16, 1924), compared the colloidal benzoin reaction under routine hospital conditions with the other well known tests carried out simultaneously on the same specimens. They found the colloidal benzoin reaction a simple test and very nearly as sensitive to syphilis of the central nervous system as the Wassermann reaction. It is not quite as sensitive as the Wassermann reaction. The authors cannot agree with those who contend that there is a characteristic luetic curve as contrasted with a paretic curve. It is true that some cases of tabes show less tendency to precipitate in tubes 9, 10 and 11, but so did one or two cases of undoubted general paralysis of the insane. A positive result (that is, precipitates in tubes 1 to 6 at least) is not obtained with any disease other than syphilis of the central nervous system so far as we have been able to ascertain. Definite changes (other than a complete positive, and in the absence of blood) indicate apparently some definite pathological change in the cerebrospinal fluid; but all pathological fluids do not necessarily show any colloidal benzoin reaction.

Wassermann and Kahn Reactions.—F. B. Johnson and W. L. A. Wellbrock (*Southern Medicine and Surgery,* April, 1924) record the following results of a series of parallel tests:

1. In a series of 1,935 parallel Wassermann and Kahn tests an agreement of 91.6 per cent was found.

4. A positive Wassermann test by the Kolmer method is perform than the Wassermann, but cannot replace it, because the latter shows a higher percentage of positive results in known cases of syphilis.

3. In syphilis the Kahn test gives a certain number of positive results with the Wassermann negative, and likewise the Wassermann shows a certain number of positives with Kahn negative.

4. A positive Wassermann test by the Kolmer method is diagnostic of syphilis.

5. A positive Kahn test, with few exceptions, means that syphilis is present.

6. In the reading of the results of the Kahn test, considerable difficulty is encountered in those that are not strongly positive. Experience and careful technic are important factors.

7. In treated cases of syphilis the Wassermann tests appear to be more sensitive than the Kahn.

8. With spinal fluid a certain number of positive results can be obtained by the Kahn method, but these are only about one half as many as can be obtained by the Wassermann test in syphilis.

9. It is therefore considered advisable that the Kahn test be used in conjunction with the Wassermann in all serological examinations made for the diagnosis of syphilis; because, on account of its close agreement, it acts as a check on the Wassermann, and also gives a certain number of positive results when the Wassermann is negative.

A Flocculation Test for Syphilis.—C. B. McGlumphy (*Journal of Laboratory and Clinical Medicine,* May, 1924) has prepared an antigen from human heart muscle, and is convinced that flocculation occurs when this is mixed with luetic serum. Of the four hundred sera tested, the Wassermann reaction agreed in 98.25 per cent. Negative serum shows no flocculation when mixed with such an alcoholic extract. Glycerine in amounts of 0.05 c. c. added to the mixture of alcoholic extract and serum increases the size of the floccules in a positive test, thus making the reading easier.

Atypical Distribution of Varicella Lesions Dependent Upon a Coexistent Syphilitic Infection.—W. S. Tillett and T. M. Rivers (*Bulletin of the Johns Hopkins Hospital,* May, 1924) report a case of varicella in which the unusual distribution of the lesions was dependent upon the irritation of the skin by a coexistent disease—hereditary syphilis. The eruption was most marked over the face, scalp, and extremities, instead of over the trunk. The case reported is an example of the influence which one disease may have on the distribution of the lesions of another occurring simultaneously in the same patient.

SURGERY

Surgery of the Pituitary Gland.—P. Sargent (*British Journal of Surgery,* January, 1924), summarizes his views as follows:

Operations for pituitary tumor are only justified as a means of relieving headache or averting blindness. Tumors are rarely, if ever, capable of complete removal. The choice of operative approach lies between the transphenoidal method of Cushing, the frontal route of Frazier, and the temporal route of Horsley. The first named is comparatively easy and attended by a low mortality rate, but its field of usefulness is limited to one type of pituitary tumor in which the sella turcica is considerably enlarged; the second gives better access, and can be used for all varieties of lesion in or near the pituitary gland; the third is useful for cases in which the general intracranial pressure is high.

Fracture of the Femur.—R. H. Russell (*British Journal of Surgery,* January, 1924), offers the following point of view on fractures.

1. In a limb previously normal that is rendered perfectly comfortable in a natural position, muscular action is never the cause of displacement of fragments.

2. The causes of malposition of fragments are three in number, viz., unnatural position and discomfort; action of gravity, and splints.

Unnatural position and discomfort: The most universal and the most unfortunate error that has hampered the treatment of fractures is the belief that the limb must be placed in a certain position to meet the supposed requirements of a short proximal fragment that is being uncontrollably displaced by a certain muscle. The author instanced the case of the iliopsoas muscle in fracture just below the lesser trochanter; and an equally good example taken from the upper extremity will be the visible displacement of one or other fragment of a broken humerus by the deltoid muscle. It would at first sight appear almost incontestably right in principle that the limb should be brought into alignment with the proximal fragment that is being pulled out of place in this way. This is not the case, however, for the visible displacement, obviously caused by muscular action, is only a transient phenomenon, and will disappear as soon as the limb is put into a comfortable position and the surgeon's back is turned. So that when, with considerable pains and ingenuity, we have fixed the limb in an unnatural and uncomfortable position in deference to the proximal fragment, we shall find that the proximal fragment ten minutes later will have changed its position altogether, that it and its muscles have assumed the position to which they are accustomed, and that the position we have assigned to the limb is altogether wrong. We ought to have disregarded the proximal fragment altogether, and placed the limb in a position that we know to be natural and comfortable, with the assurance that the position which is natural and comfortable for the entire limb will be equally so for the proximal fragment in common with the rest, and that such position will be that which it will assume.

The action of gravity: This is the sole inescapable cause of angulation in the case of the femur, and is met and counteracted with the utmost ease, as has been already described. It is the great advantage of our simple methods that the seat of fracture is always exposed to inspection and easy handling.

Splints: The means of avoiding this source of difficulty are obvious. The Thomas splint, invaluable for many purposes, we never employ in the treatment of fracture of the femur, whether simple or compound.

To recapitulate: In fracture of the femur, given a method of pulling out the thigh muscles to their normal length by an appliance that is perfectly comfortable, nothing will then remain to be done except to counteract the effect of gravity at the seat of fracture.

Treatment of Ununited Fractures.—J. M. Salmon (*International Journal of Medicine and Surgery,* January, 1924), details the following treatment, operative, for ununited fractures.

Before deciding upon any operative procedure, it is necessary to wait until all latent infection has subsided. During the waiting period, the limb should be massaged and the circulation improved by heat, congestion and bandaging. Joints should be mobilized and muscular atrophy prevented by passive motion. Extensive and adherent scars should be removed and skin grafting employed. "The longer the period of delay, and the greater the trouble taken preparatory to reconstruction of bone, the greater the chance of success" (Hey Groves). The operative technic must be aseptic. In no other department of surgery is this more important. Hemostasis must be complete and the post-operative immobilization efficient.

In operating upon ununited fractures, two cardinal principles must be borne in mind: First, the osteoblasts necessary for new bone formation are contained in the dense bone; therefore, there must be contact of the osteogenetic layers. Second, the blood supply to these osteoblasts must be definite and sufficient without interference by scar tissue.

The type of operation to be employed will depend upon the conditions presenting. Step cutting is useful where the resulting shortening is not a serious disadvantage, as in the humerus and forearm. Intramedullary pegs are satisfactory where there is a considerable gap and where it is difficult to maintain alignment. Such pegs should be approximately three times the length of the gap and should be of living bone with its periosteum and subjacent dense bone. Inlay grafts are most generally applicable and give excellent results. It is essential that the ends of the graft be maintained in firm contact with healthy, well nourished bone.

If plates are used, they should be considered merely as internal splints, and, as already stated, there must be firm apposition of healthy bone. As a general rule, plates should be avoided in the treatment of nonunion.

Internal Splinting of the Spine.—P. H. Magnuson (*Surgery, Gynecology and Obstetrics,* January, 1924) reaches the following conclusions from his study of twelve cases.

1. A heavy bone graft is much preferable to a light one because it may be fastened to the spinous processes in such a way that it will give immediate immobilization, immediate relief from pain, and do away with the necessity of uncomfortable body casts, and allow the patient to move freely in bed and to assume the upright position within three weeks of the time of the operation.

2. The ivory screws inserted through a heavy bone graft into the spinous processes make a firmer and stronger fixation immediately than any other device. Heavy, braided silk, where it is not possible to use ivory screws makes a firmer and more constant fixation than does kangaroo tendon or catgut, and does not cause any more irritation of the tissues than do these other materials.

3. This type of fixation of the spine should be done wherever chronic disabling pain and increasing deformity exists as a result of the following conditions: a, tubercu-

losis of the spine; b, tuberculosis caries of the bodies of the vertebræ; c, fracture of the spine—compression of the bodies, fracture of the articular processes; d, forward slipping or relaxation of the fifth lumbar vertebræ; e, chronic strain with relaxation of the ligaments where there is malformation at the lumbosacral articulation with disabling backache.

Modified Fusion Operation.—P. Lewin (*Journal of Bone and Joint Surgery,* January, 1924) proposes a new operative technic for the spine. Its object is to produce more rapid ankylosis. The classical fusion operation is used with the technic of Hibbs. One or two osteoperiosteal grafts, obtained from the tibia by the technic of Delagénière, are placed in a bed of bone that has been denuded of its osteoperiosteal layers. The purpose of the graft is not to produce a splint but to furnish all the elements necessary in the production of new bone and thereby effect a more solid early ankylosis, which is the desired result. The method is applicable to those conditions where solidification is indicated, as tuberculosis fracture, and scoliosis, but especially in tuberculosis. The writer believes that the osteoperiosteal graft, first recommended by Ollier and accentuated and established firmly by Delagénière, is the most efficient bone producer at the present time. If we could produce a hypertrophic arthritis limited to the affected area it would be ideal. This method is the nearest approach to it.

Etiology and Treatment of Claw Foot.—G. P. Mills (*Journal of Bone and Joint Surgery,* January, 1924), presents the following summary of his study. Claw foot is an acquired deformity, occuring most frequently in adolescents and rather more commonly in males than in females. Shortening of the tendo Achillis is not an essential part of the deformity but is present as a complication in about one quarter of the cases. The deformity is such as would be theoretically expected from paralysis of the external plantar nerve. The evidence that temporary paralysis or paresis of this nerve is the cause of the deformity, while not complete, is certainly suggestive. In early cases simple treatment by splints and boots will often avoid the necessity for operation. For moderate cases transplantation of the extensor proprius hallucis is a satisfactory operation. In advanced cases, when portions of the inner four metatarsals are removed, it is advisable to divide the fifth metatarsal at the same time.

Separation of Quadriceps from Patella.—I. Zadek (*Journal of Bone and Joint Surgery,* January 1924), reports as follows on two cases, pointing out the differences between separation and rupture of the quadriceps tendon.

1. History suggestive of underlying weakness. The first patient sustained several injuries to the knee, each somewhat more disabling than the preceding, until the last, which was fairly complete. The second patient had sustained a similar injury to the left knee eleven years previously.
2. Local subjective pain at the site of injury is slight, and local pressure causes a very moderate amount of discomfort.
3. There is a depression just above the superior border of the patella into which one finger will fit transversely.
4. There is complete loss of power of extension of the leg.
5. There is no enlargement of the lower end of the proximal segment, but just a perceptible quiver on attempted contraction of the quadriceps, thus differing from the reported cases of ruptured quadriceps.
6. There is a strikingly slight amount of hemorrhage.
7. At operation the patella is smooth and covered with a periosteumlike structure (the patella, being a sesamoid bone, has no periosteum). Only part of the fibres of the vastus internus are intact. The joint is found open, exposing the intercondylar space of the femur.
8. The end result is complete restoration of function (incomplete in the second patient, due to an old arthritis) after operative suture.

Crushing Fractures of the Os Calcis.—W. L. Sneed (*Journal of Bone and Joint Surgery,* January, 1924), summarizes his findings as follows.

In the series of cases presented there was one point in common—tenderness. In three cases there was also pain under the heel and tenderness. It is my opinion that when an os calcis is severely crushed by a fall upon the heel, and the astragalus is driven down into it, widening the heel and lowering the external malleolus so that it impinges upon the fractured os calcis, changing fibula from a stay of the ankle joint into a weight bearing bone, for which nature never intended it, pain is produced. It was the persistent pain and tenderness in the first case in this series that first started the author upon this investigation. He wishes to emphasize the necessity of allowing for drainage when operating in these cases, as there is considerable oozing of blood. One other point he wished to stress is that it is difficult to show by radiogram the tunnel after it is made in the os calcis. He insisted upon the patient bearing weight upon his foot at an early date. This was a necessary extra precaution so that dense fibrous tissue might not form and impinge upon the external malleolus.

Operative Treatment of Congenital Dislocation.—F. P. Dickson (*Journal of Bone and Joint Surgery,* April, 1924), presents five cases of which four, or eighty per cent., proved quite satisfactory. He concludes therefore: An operation of election should never be performed unless very definite indications exist and there is a reasonable chance of securing improvement in the condition for which it is done. Any operation on an untreated or on an unsuccessfully treated congenital dislocation of the hip in an adult is an operation of election. It follows then that the indications for operative intervention in such cases must be clean cut and definite. In the author's cases he considered that only one indication existed, and this was disability of a degree sufficient to interfere with the ability of the individual to lead a normal life.

While he appreciates that five is perhaps a small number of cases on which to base conclusions, still the results have been satisfactory enough to seem worth while reporting. Basing our conclusions on these five cases he feels that an operative procedure is useful and worthy of consideration in cases of congenital dislocation of the hip in adults where there is sufficient instability to interfere with the individual's ability to lead a normal life.

Sequelæ After Operation for Internal Semilunar Cartilage.—N. Dunn (*Journal of Bone and Joint Surgery,* April, 1924), reports on a rare case, which, together with his experiences in seven additional cases where incomplete recovery after removal of the internal semilunar cartilage appeared to be due to involvement of the saphenous nerve in the scar, leads him to conclude as follows: 1. That a neuroma of the patellar branch of internal saphenous nerve may explain certain cases of incomplete recovery after removal of the internal semilunar cartilage. 2. That simple excision of the scar may not be sufficient to cure the condition. 3. That excision of the scar and evulsion of the nerve is the most satisfactory treatment. The risk of these sequelæ may be obviated by retraction of the nerve or evulsion of the proximal portion of the nerve at the time of operation.

Scoliosis Fusion Operation.—R. A. Hibbs (*Journal of Bone and Joint Surgery,* January, 1924) from a study of fourteen cases, says that these cases give evidence that we have in fusion a means of preventing the progress of deformity in scoliosis in cases in which it is caused by muscle imbalance; that the operation should be done before gross deformity has developed, as it is easier to prevent than to correct deformity; that after fusion the upright posture is maintained with greater ease and trunk movement exercised with less fatigue.

Arthroplasty.—P. Santy (*Surgery, Gynecology and Obstetrics,* September, 1923) offers the following conclusions from his study. Arthroplasty enlarges considerably the field of operation for ankylosis. In the hip and knee arthroplasty opens up almost a virgin field in joint surgery. Resection for ankylosis becomes a secondary method to be used only after failures by arthroplasty or in those cases in which the condition of the bones of the joint, or more rarely the condition of the soft parts, makes mobilization a hopeless procedure.

Mobilization of Ankylosed Joints.—W. R. MacAusland (*Surgery, Gynecology and Obstetrics,* September, 1923) presents a study of arthroplasty, historical, experimental and clinical, with numerous recent cases. He stresses the following points: That excision of a joint does not constitute an arthroplasty; that highly developed technical skill is absolutely necessary; that judgment in the selection of cases is very difficult.

DIABETES

Xanthoma Diabeticorum.—Ralph H. Major (*Bulletin of the Johns Hopkins Hospital,* January, 1924) reviews the literature of the condition, and reports three cases in which studies were made on the blood cholesterol. Two of the patients wtre treated with insulin. In the first case, the blood cholestrod was 432 mg. to 100 c.c.; in the second it was 632 mg. to 100 c.c. Insulin therapy caused a disappearance of the lipemia in four days, and a prompt fall in the blood cholesterol to a normal value. A like effect was observed in the third patient after insulin, whose initial blood cholesterol was 533 mg. per 100 c.c. The clearing up of xanthoma diabeticorum depends partly upon a disappearance of the lipemia and lipoidemia, and partly upon the degree of blood supply which permits absorption of the substances in the xanthomatous lesions.

Insulin Treatment of Diabetes Mellitus.—W. Falta, F. Depisch, and F. Högler (*Wiener Archiv. für Innere Medizin,* April 1, 1924) show that it is possible to increase the tolerance to food by combined dietetic and insulin treatment to a greater extent than with the purely dietetic treatment alone. With simultaneous insulin therapy the tolerance may be raised with the same success on a mixed diet with low sugar values as with the strictest dietotherapy of Petren, which causes the patient great privations and even not harmless digestive disturbances. The authors were also able to show that with the combined treatment it is possible to maintain the increased tolerance to food even in those cases in which this was no longer possible with dietetic treatment alone. In regard to the relief from acidosis, the insulin treatment is a great advance in so far as the acidosis may be avoided even in those cases in which this would not be possible with a purely dietetic treatment, and besides, this could be accomplished with considerably less privations on the part of the patient. In the use of insulin the most important consideration should be the reduction of the fasting blood sugar content to normal or below normal. The nature of the diet must depend entirely upon the individual case.

Insulin Treatment Without Blood Sugar Estimations.—Arthur Innes (*British Medical Journal,* January 12, 1924), reports that two days' fasting, and then a "ladder diet" until the patient's urine begins to show sugar, gives the starting point for the first insulin injection, which the author intends to give in the future twice a day, starting with twenty minims in the day. Food must be ready for the patient as soon as he receives his injection, and in no circumstances can longer than fifteen minutes be allowed to elapse. The patient must always have sugar and water at his bedside, and be advised to take a small amount should symptoms of faintness, depression, air hunger, etc., appear. He must be educated to the testing of his urine for sugar and keep a record of every specimen voided for the first two weeks and morning and evening thereafter. Do not start if there is any fear that the treatment cannot be kept up, and it can never be forgotten that at present the cost of the insulin is very great. Do not attempt to get a constantly sugar free urine. A trace of sugar in the morning specimen is a safeguard giving a feeling of assurance that no harm can result from the treatment. It cannot be forgotten at any time that the treatment of diabetes is still a matter of careful dieting, and that insulin is only our greatest and most valuable aid.

Diet During Insulin Treatment of Diabetes Mellitus.—K. S. Hetzel (*British Medical Journal,* February 9, 1924) states that insulin has not removed the need for an accurate control of food in diabetes, but it has rather emphasized that need. He has advanced the following general guiding principles: 1. The total dietary of an adult diabetic for each day should rarely exceed 2,000 calories. 2. The protein allowed each day may be at the rate of 0.5 gram or slightly more for each pound of the patient's body weight. It must not be forgotten that protein contains over half its weight of substance which can yield sugar. The carbohydrates may reach a total of thirty to sixty grams, and the fats should not exceed the sum of twice the carbohydrates together with half the protein, lest acetones appear in the urine, and diabetic coma develop as the result of faulty metabolism of the excess fats. 3. Glycosuria must always be fully controlled, or the patient cannot improve; and therefore carbohydrates must be strictly limited by the glycosuria. 4. If the supply of insulin fails temporarily the diet must be cut down, especially in respect of the fats, and the patient should rest. 5. Intercurrent infections or surgical operations compel a temporary increase of the insulin needed to abolish glycosuria on any particular diet. 6. Diabetic coma must be treated promptly and freely with insulin, for recovery is impossible if the patient has been in coma for more than twelve hours. 7. Every patient on insulin must be instructed in the symptoms of hypoglycemic collapse, and know how to check them by taking sugar. Any patient of ordinary intelligence can be taught to give his own injections of insulin.

A Case of Diabetes Refractory to Insulin Relieved by Antiluetic Treatment.—A case related by Paul H. Charlton (*Endocrinology,* March, 1924), is that of a colored man with pulmonary tuberculosis and diabetes mellitus, whose blood sugar failed to respond to dietary regulation and to insulin, although the latter caused his glycosuria to disappear. Antiluetic treatment proved effective respecting both.

Effect of Insulin upon the Complement Derived from Insulinized Guineapigs for the Wassermann Reaction.—Otto S. Kretschmer (*Journal of Laboratory and Clinical Medicine,* April, 1924), did the experimental work reported to determine whether the hypoglycemia produced by the injection of insulin, or some other change produced in the blood by insulin, might alter the action of complement derived from the guineapig in performing the Wassermann reaction. The results of this study demonstrate that the pooled serum of guineapigs, treated with insulin over a short period of time, in which acute hypoglycemic symptoms have thus been created, shows no appreciable change in its complementary titre in comparison with guineapigs not so treated, and retains this property for fully thirty days.

Sixteen Months' Experience with Insulin.—Byron D. Bowen (*Buffalo General Hospital Bulletin,* January, 1924), reports upon 107 cases of diabetes selected for insulin treatment out of a group of 173 cases observed for sixteen months. Insulin appears to bring about much more satisfactory results in young patients without complicating diseases. Even young people with extreme diabetes have improved miraculously. Death has at least been averted in nineteen patients, thirteen of them being below the age of forty. What is equally encouraging is the restoration of thirty-three patients to useful and productive lives. By means of insulin, the management of coma and acidosis cases has been made more satisfactory, and the results have been materially improved. Even better, however, were the results in the precoma group, although the CO_2 capacity of the plasma was not essentially different than in the cases of deep coma. Here also complications, especially acute infections and thyrotoxicosis, influence materially the outcome of severe acidosis cases. While the eventual outcome of diabetic patients who are absolutely dependent upon insulin for their nutrition is uncertain, the diabetes should be held in abeyance when feasible, in order to prevent if possible, the loss of what native tolerance remains, and to defer such complications as are likely to arise in prolonged diabetes. To accomplish this, especially in very severe cases, if they are to be put on a full maintenance diet, the most meticulous care must be exercised, requiring full cooperation between the patient, the physician, the dietitian, and the laboratory.

Studies of the Effect of Exercise in Diabetes. I.—Harold E. Himwich, Robert O. Loebel, and David P. Barr (*Journal of Biological Chemistry,* March, 1924) state that qualitatively the reaction of diabetics to exercise seems to be similar to the normal. There is in both a reduction in CO_2 capacity, CO_2 tension, and blood alkalinity. Quantitatively it appears that for an equivalent amount of exercise the change both in CO_2 capacity and pH is greater in the diabetic. The reduction in CO_2 capacity can be accounted for quantitatively by the increase in lactic acid in the diabetics studied.

Glycolysis in Bloods of Normal Subjects and of Diabetic Patients.—Edward Tolstoi (*Journal of Biological Chemistry,* May, 1924) studied the glycolytic power of eight normal subjects and of eleven diabetics, in some instances both at room temperature and at 37° C., using aseptic precautions. No diminution in the glycolytic power of diabetic bloods was observed when compared with that of normals at 37° C. At room temperature, the rate of glycolysis of diabetic and normal bloods was definitely slower. The various results reported by different workers may be explained by the fact that no uniform temperature was employed.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, SEPTEMBER 17, 1924

Medicolegal Notes.

DEFENDANT'S NEGLIGENCE CAUSING INJURY BY MALPRACTICE MUST BE PROVED

In an action for malpractice in treating plaintiff for an injury resulting from being run down by a motor cycle, it appeared that plaintiff was taken to defendant's office; that defendant examined him and found an open wound in his right leg, which he dressed, that he attended him for several days, when he was dismissed from the case; and that another doctor attended plaintiff for over three months, when he was taken to a hospital, where several weeks later his leg was amputated six inches below the hip. There was evidence tending to show that the cut or wound had become septic; and that pus had formed above the wound and discharged through it. A verdict was rendered for plaintiff and defendant brought exceptions.

An exception to an instruction to the jury to consider the defendant's failure to discover a fracture of the fibula was sustained, there being undisputed medical testimony showing that the failure of the defendant to discover and treat this fracture did not result in any septic condition, nor any evidence that it was a cause or a contributing cause of the plaintiff's condition resulting in the amputation of his leg, nor was this claimed by the plaintiff.

It was also held that the trial court should have granted defendant's request for an instruction that the fact that the plaintiff suffered sepsis and amputation of his leg did not raise a presumption of want of proper care and skill or of negligence on defendant's part in his treatment of the plaintiff. King v. Belmore, Massachusetts Supreme Judicial Court, 142 N. E., 911.

PHYSICIAN'S LIABILITY UNDER OKLAHOMA'S ANTINARCOTIC LAW

In a prosecution under the Oklahoma Statute, section 8887, Comp. Stat., 1921, charging the crime of transporting narcotic drugs from a place unknown to Oklahoma City there was testimony as to the sale by defendant, a physician, of a quantity of narcotic drugs to an addict. On appeal from a judgment of conviction, the defense was that under the provisions of this statute a physician is authorized to transport narcotics. The Oklahoma Court of Criminal Appeals held, Stout v. State, 224 Pac., 375, that the statute was designed to prohibit the unauthorized sale, introduction and transportation of narcotic drugs; and that it applies to physicians as well as to others, excepting only in cases where the use of narcotic drugs is necessary in the treatment of disease, and then only in such quantities and in such manner as is designated in the statute. The fact that the accused is a physician will not make him immune from punishment under the penal provisions of the statute in cases where the penal provisions of the statute in cases where he knowingly participated in the unauthorized traffic in narcotics. And where such a penal statute expressly provides that certain exceptions to or exemptions from its operation shall be matters of defense, such exceptions need not be negatived in the information.

Letters to the Editor.

MATERNAL WELFARE

Kansas City, Mo., *August 30, 1924.*

To the Editor:

A nation wide movement for improved conditions in maternal welfare is being inaugurated through the combined efforts of a joint committee representing the American Gynecological Society, the American Child Health Association, and the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons. An appeal is being made to the secretaries of the State Medical Associations to enlist the cooperation of their members and also of the constituent County Medical Societies to stress the subject of obstetrics in the programs of their meetings and try to have more papers and discussions on the topics vital to this most essential branch of our work.

The reason for the propaganda is that recent statistics are published showing a deplorably high mortality in maternity work in our country. A Washington report gives the United States the unenviable position of third from the highest death rate in both sepsis and eclampsia among the seventeen civilized nations of the world. These two accidents are almost absolutely preventable. Among the reports from sections where prenatal care is taught and where aseptic care observed in labor the mortality is reduced one third to one half the average in the same region.

So many other features while not so tragic demand reform in obstetrics that the committee hopes within five years that not only the mortality of mothers and children may be reduced, just as the profession has cut down the death rate in typhoid fever, tuberculosis and diphtheria in recent decades, but also that obstetrics may be again placed on the plane with internal medicine and surgery, a dignity which it formerly occupied in the colleges and in the profession, as one of the three great branches of the healing art. This is a work of education, and it demands the cooperation of teachers and specialists in obstetrics, general practitioners, nurses, and the general public, to accomplish so ambitious a program.

The Annual Report to the American Association of Obstetricians, Gynecologists, and Abdominal Surgeons details some of the conditions found and shows the more hopeful outlook for the future.

(*Signed*)

Fred L. Adair, Minneapolis.
Henry Schwarz, M.D., St. Louis.
Robert L. DeNormandie, M.D., Boston.
Geo. W. Kosmak, M.D., New York.
Frank W. Lynch, M.D., San Francisco.
Ralph W. Lobenstine, M.D., New York.
Wm. Clark Danforth, M.D., Evanston, Ill.
Geo. Clark Mosher, M.D., Kansas City, Mo.

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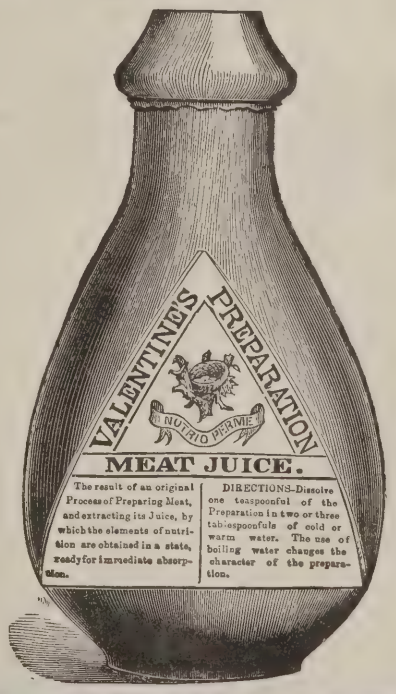
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Diseases of Children.

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Miscellany.

The First Orthopedic Clinic in Holland.—It is remarkable that orthopedics have hitherto received so little attention from the medical profession in Holland, but this condition is likely now to be remedied by the opening, at Leyden, of a new orthopedic clinic—the first in the country, says an editorial writer in the *Lancet,* August 23, 1924. For more than ten years a number of infirmary buildings have been under construction in Leyden, supplied with laboratories, clinics, and dispensaries for every branch of medicine at a total cost of some £1,250,000. One of the buildings, which was originally designed for a fever hospital, has been allocated to the Society for the Welfare of the Crippled and Disabled. This hospital has accommodation for forty beds, twenty of which will be paid for by the Government and will be used for teaching purposes. Dr. Murk Jansen, who is now lecturer in orthopedic surgery at the university, has been appointed director. Many difficulties had to be overcome before this project could be carried out. The opposition to the establishment of the clinic on the part of some surgeons is noteworthy, the *Lancet's* correspondent writes, as giving an idea of the old fashioned professional outlook in Holland in certain directions. The surgeons there have continually opposed the separation of any branch of medicine from surgery, and for this reason it took a long time before otorhinolaryngology, dermatology, and urology became separate specialties. For the same reason, too, there are in Holland no surgeons who specialize in surgery of the abdomen or brain. It must be remembered that for many years in all the British medical centres specialism was looked at with considerable suspicion, one fact being insisted upon and another fact suppressed. It was continually pointed out that there could be no sound specialism that was not founded on general medicine, but it was a long time before it was allowed that progress along special lines would be most surely arrived at by special work. The first is true, but the second is no less true. The establishment of the new clinic, under an orthopedic surgeon so well known as Dr. Jansen, should do a great deal to further in Holland the development of this branch of medical science.

Sutures.—The problem of suture materials is one which has taxed surgeons from very early times, says a writer in the *Lancet,* August 23, 1924. Since Ambroise Paré startled his scientific world by daring to ligate a bloodvessel, surgeons have continuously sought a material which would do what they require without introducing some element of secondary difficulty. In a septic wound to introduce a foreign body is to invite trouble, and even where the most scrupulous asepsis can be maintained it has always been evident that to leave unabsorbable material in a wound is a defect, however necessary, in surgical technique. With the introduction of catgut it was thought that the problem had at last been solved, but it was soon found that the difficulty of controlling the rate of absorption was considerable. However carefully catgut may be prepared, individual variations in absorptive power are enormous, and the "forty day" label in which the surgeon confides is a very rough index, considering the variation in rapidity of absorption in the muscles, the peritoneum, or the stomach, in the child and in the man, quite apart from anomalies in the catgut itself. Silk will certainly remain in the tissues, but surgeons have found to their cost that it may frequently gather to its folds seven other devils worse than itself in the shape of chance bacteria, and the end of that patient may be worse than the first. An ingenious compromise was suggested recently by Mr. D. McIntyre, whereby a fine filament of silk is embedded in a strand of catgut. The catgut is absorbed, and the fine silk appears to give rise to no trouble. The larger suture is easier to handle than fine silk, and has not the same tendency to cut through the tissues at operation. For, apart from the duration of suture materials, we have to consider the endurance of the material sutured, and it is to be feared that we often forget how slight this is. Generally speaking, there is no known means by which two portions of soft living tissue can be kept together artificially for more than ten days. If union has not occurred within that time, the sutures cut through and the tissues fall apart. Indeed, in many cases five or six days is the longest period for which reliance can be placed upon sutures, not because they are absorbed, but because the material sutured disappears. It is said that certain materials such as kangaroo tendon and silk impregnated with mercury are not absorbed, but are invaded by living tissue cells and practically become embodied in the tissues. Were this the invariable result of their introduction the surgeon would have attained his ideal, but unfortunately it is not always the case. It is well, however, that we should recognize that the only permanent suture, if it is ever discovered, will be one that is gradually embodied in the living tissues, and that unless this condition is satisfied, no suture, whatever its durability, can hold soft tissues together for more than a few days.

Botanical Research in China.—Professor John M. Coulter, head of the department of botany of the University of Chicago, lectured during the session of the British Association for the Advancement of Science on the progress of botanical study and research in China, as he saw it during his recent five months' visit. The most important botanical work, said Dr. Coulter, is being conducted at the National Southeastern University of Nanking and at Nanking University. It is notable in being concerned chiefly with practical problems in developing the natural resources of the country. The untouched possibilities of China are most impressive. The College of Agriculture of Southeastern University at present has one large experiment station and nine substations, all well equipped.

The principal botanical enterprises under way in China are, first, a complete collection of the native plants of Central China, not only for purposes of classification but also as sources of valuable raw materials and drugs; second, reforestation, for most of China is completely denuded of trees; third, improvement of vegetables, notably the soy bean; fourth, improvement of cotton; fifth, studies on bamboo; sixth, problems of plant disease.

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Disease Prevention.—Major General Sir David Bruce, K.C.B., F.R.S., chairman of the governing body of the Lister Institute of Preventive Medicine, in his inaugural address as president of the British Association for the Advancement of Science, outlined the new strategy of medical science in its efforts to prevent the disease and disability which cause a direct loss annually amounting to $750,000,000 in England and $30,000,000,000 in the United States. When the British Association first met in Canada forty years ago, said the speaker, "we were still in the gloom and shadow of the dark ages. Now we have come into the light. Man has come into his heritage and seems now to possess some particle of the universal creative force in virtue of which he can wrest from Nature the secrets so jealously guarded by her and bend them to his own desire."

What has been and can be accomplished in the way of prevention where the causes of disease are known was illustrated by many cases of army experience where complete and comparable statistics are available. For instance, in the South African war at the beginning of the century where the British had only 208,000 troops, there were 58,000 cases of typhoid fever and 8,000 deaths. But in the Great War on the western front with an average British strength of one and a quarter million, there were only 7,500 cases of typhoid and 266 deaths. That is, after inoculation with injections of dead typhoid bacilli, there were fewer cases of the disease in the Great War than there were deaths from it in the African war. In the French army there were 96,000 cases and nearly 12,000 deaths in the first sixteen months before the French adopted vaccination.

Trench fever, which was unknown before the war and of which the germ is still unknown, caused more than a million cases of illness in the Allied armies before 1918 when it was discovered that lice carried the invisible virus. When the louse was eliminated the trench fever went with it. During the first two months of the war, nine or ten of every thousand of the wounded were infected with tetanus and eighty-five per cent. of these died of it. After the introduction of antitetanic serum the cases fell to about one in a thousand and the mortality to less than half.

Typhus fever is also carried by a louse; Rocky Mountain fever by the woodtick; malarial and yellow fevers by mosquitoes, the African sleeping sickness by the tsetse fly, and in all such cases the disease may be eliminated by getting rid of the insects.

Tuberculosis is not so easily dealt with. What Sir David Bruce says on this important question should be quoted directly, since the British Government has adopted very extensive and expensive measures to prevent tuberculosis:

> In regard to the tubercle bacillus it is so widespread, so ubiquitous in civilized communities, passing from one infected host to another, that it would seem impossible under existing conditions to prevent its spread. At present it is taught, and on what seems good evidence, that the majority of the population of our crowded cities has at one time or another been attacked by this disease. But in every hundred men who die in England, only about ten die of tuberculosis, which shows that a large percentage of the population successfully resists the tubercle bacillus.
>
> When this occurs it means that the person attacked possessed powers of resistance which enabled him either to destroy the invading bacilli or to render them harmless.
>
> A point of importance in this connection is that it has recently been demonstrated that the disease is usually acquired in childhood. The fact is of capital significance, for if the disease is recognized sufficiently early, and the child is placed under good hygienic conditions, there is a very good chance of effective resistance and immunity against a second attack being set up. The present evidence goes to show that the presence of latent tubercles prevents a second invasion.
>
> The preventive measures against tuberculosis at the present time are, in the first place, improvement in the general hygienic conditions. Thereby individual resistance—and communal resistance—can be remarkably increased.
>
> In the second place, as every case of tuberculosis must arise from a previous case, either human of bovine, it is very necessary that methods of early diagnosis, preventive treatment, and segregation of the more infective types may be provided for. This is done by the setting up of tuberculosis dispensaries, care committees, sanatoria, hospitals and colonies.

Enough is now known about the essentials of health and the causes of disease to secure for the next generation sounder bodies and safer lives, if man could be allowed to work out his salvation in peace, but as Sir David said:

> To saddle the country with a million and a half of unemployed, with the consequent poverty, insufficient food, clothing and housing, is not calculated to further the prevention of disease and raise the standard of health. It is too much to hope that some time in the revolving years a time may come when by a Confederation or League of Nations the world may be so policed that no one country will be able with impunity to attempt the destruction of its neighbor. Until this happens it is difficult to see how rickets, tuberculosis, and other diseases can be adequately dealt with in our city population.

Lack of Eye Balance May Cause Clumsiness.—The man who is clumsy with his hands, who cannot perform delicate tasks with tools, shoot straight, or play such a game as baseball probably lacks a correct balance between the muscular systems of his two eyes, E. C. Clements, British physician and aviator, told the psychologists of the British Association for the Advancement of Science. This observation resulted from studies of eye disorders which rendered British pilots incapable of landing airplanes successfully during the war. Two factors are involved in successful binocular vision, he said. The impulses which are received from the two eyes must be interpreted correctly by the brain. In response to this stimulus there must be efficient coordination of the muscles responding. In many cases such defects can be removed by special visual training exercises.

Glasses for Colorblindness.—The possibility of at least a partial cure for colorblindness was pointed out at the meeting of the British Association for the Advancement of Science, by H. E. Roaf, M.D., professor of physiology at the medical school of the University of London. "As a result of the examination of color blind individuals," reports Professor Roaf, "it has been found that some of them are sensitive to as great an extent of the spectrum and apparently with intensity equal to that of normal people. Therefore the difficulty of these persons must lie in their failure to differentiate certain wave lengths of light. Such individuals can recognize their mistakes by examination of their color matches through a colored screen. It is possible that if such a person wore a colored glass over one eye, he might learn to recognize colors like normal persons while wearing the glass."

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European Cancer Campaigns.—During the last year a number of new campaigns against cancer have been organized in European countries. Some have received official sanction by the national government. In Spain, for example, a League Against Cancer has been created with the King as president. An extensive cancer campaign has been organized this year by the Society for the Eradication of Cancer in the Czecho-Slovakian Republic. Not only has official recognition been given, but a large gift of money has been received from the President of the Republic, T. G. Masaryk. The Franco-Anglo-American League Against Cancer has recently held its annual meeting in Paris, under the chairmanship of Paul Strauss, former Minister of Health.

Correspondence and Reading Courses in Public Health.—For more than twelve months the Public Health Service has been collecting from the executive officers of State departments of health and from the universities with which Class A medical schools are affiliated, data regarding correspondence and reading courses in public health. Reports received to June 1, 1924, indicate that courses have been conducted during the past two years by seven State departments of health and by six universities.

Of the courses given by departments of health, five are for sanitarians—those conducted in Kansas, Illinois, Ohio, New Mexico, and Pennsylvania. In addition, the Virginia State Health Department offers a correspondence course for teachers; in both Virginia and Minnesota a course is given in the hygiene of maternity and infancy for mothers; and a second course is offered in Pennsylvania, one for persons connected with industries, schools, and with civic and religious organizations.

In no case is tuition charged for the courses conducted by State departments of health. Mimeographed or printed lessons are distributed in several instances, and in two cases textbooks are used. Those taking the course are required to answer questions by mail from time to time, in four or five instances in connection with each lesson. The number enrolled varies a great deal, as will be seen in the reports of the various courses; so also does the length of the course.

The correspondence courses offered by universities are in five instances conducted by the extension division of the university and in one case by the department of hygiene. One university conducts only one course; two conduct two courses; two, four courses; and one conducts seven courses. Most courses appear to be offered primarily for those who are now or intend to be engaged in public health work, although a few courses apparently are for laymen. In all cases tuition is charged, textbooks are used, and examinations are given. Academic credit is granted for all courses, except in one university where credit is given when the student is enrolled in the school of education but not when he is enrolled in the school of medicine. The length of courses varies from twenty to forty lessons. While the courses offered by universities may have a more dignified status than those offered by State departments of health, the number of students enrolled, as will be seen, is not so large.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

WANN IST EINE ÄRZTLICHE ABTREIBUNG RECHTSWIDRIG? Von F. Brupacher. Zurich: Arnold Bopp & Co., 1924. Pp. 96.

AN OUTLINE OF ENDOCRINOLOGY. By W. M. Crofton, B.A., M.D. New York: William Wood and Company, 1924. Pp. 126.

NERVÖSE ANGSTZUSTÄNDE UND IHRE BEHANDLUNG. Von Dr. Wilhelm Stekel. Vierte, Vermehrte und Verbesserte Auflage. Berlin und Wien: Urban & Schwarzenberg, 1924. Pp. 685.

THE TATTOOED COUNTESS. A Romantic Novel with a Happy Ending. By Carl Van Vechten. New York: Alfred A. Knopf, 1924. Pp. 286.

ALLGEMEINE PATHOLOGIE DER MALIGNEN GESCHWÜLSTE. Von Dr. Max Borst. Mit 21 Abbildungen und 6 Tafeln. Leipzig: S. Hirzel, 1924. Pp. 322.

SEXUOLOGICAL ESSAYS.. By W. C. Rivers, M.R.C.S., L.R.C.P., D.P.H. Circulation Limited to Medical Practitioners. Leipzig: Curt Kabitzsch, 1924. Pp. 168.

ORTHOPÄDISCHE STUDIE UBER HEMIPLEGIA SPASTICA INFANTILIS. Von Nils Silfverskiöld. Acta Chirurgica Scandinavia, Supplementum V. Stockholm, 1924. Pp. 242.

THESE EVENTFUL YEARS. The Twentieth Century in the Making as Told by Many of Its Makers. Illustrated. Two Volumes. New York: Encyclopedia Brittanica, Inc., 1924.

MITTEILUNGEN AUS DER MEDIZINISCHEN FAKULTÄT DER KAISERLICHEN UNIVERSITÄT ZU TOKYO. XXX Band 2, Band 3; XXXI, Band 1. Tokyo: Verlag der Kaiserlichen Universität, 1923.

MEDICAL GYNECOLOGY. By Samuel Wyllis Bandler, M.D. Fourth Edition, Thoroughly Revised. With Original Iloughly Revised. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 1123.

WOMEN CHARACTERS IN RICHARD WAGNER. By Louise Brink, Ph.D. Nervous and Mental Disease Monograph Series No. 37. New York and Washington: Nervous and Mental Disease Publishing Company, 1924. Pp. 125.

FORTSCHRITTE DER SEXUALWISSENSCHAFT UND PSYCHANALYSE. Herausgegeben von Dr. Wilhelm Stekel, redigiert von Dr. Anton Missriegler und Dr. Fritz Wittels. I Band. Leipzig und Wien: Franz Deuticke, 1924. Pp. 420.

ERGIBNISSE DER GESAMTEN MEDIZIN. Unter Mitwirkung hervorragender Fachgelehrten. Herausgegeben von Prof. Dr. Th. Brugsch. Fünfter Band, Heft I und II. Berlin und Wien: Urban und Schwarzenberg, 1923. Pp. 320.

DIAGNOSTIK MIT FREIEM AUGE. (Ektoskopie.) Von Dr. Eduard Weisz. Mit einem Vorwar von Geh. Med.-Rat Prof. Dr. Friedrich Kraus. Mit 18 Abbildungen im Text. Berlin und Wien; Urban & Schwarzenberg, 1924. Pp. 136.

PRINCIPLES AND PRACTICE OF ORSTETRICS. By Joseph B. DeLee, A.M., M.D. With 1128 Illustrations on 923 Figures, 201 of them in Colors. Fourth Edition, Thorouly Revised. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 1123.

LEHRBUCH DER NERVENKRANKHEITEN. Für Studierende und praktische Arzte, in 30 Vorlesungen. Von Robert Bing. Dritte, vermehrte und umgearbeitete Auflage. Mit 184 zum Teil mehrfarbigen Abbildungen. Berlin und Wien: Urban & Schwarzenberg, 1924. Pp. 709.

MANUAL OF THE DISEASES OF THE EYE. For Students and General Practitioners. By Charles H. May, M.D. Eleventh Edition, Revised. With 374 Original Illustrations, Including 23 Plates, with 73 Colored Figures. New York: William Wood and Company, 1924. Pp. 445.

BEITRAG ZUR KENNTNIS DER STAPHYLOKOKKENPYELITIS BESONDERS IN IHRER CHRONISCHEN FORM UND ÜBER EINE BEI DERSELBEN VORKOMMENDE EIGENARTIGE KONKREMENTBILDUNG. Von John Hellström. Acta Chirurgica Scandinavica, Supplementum VI. Stockholm, 1924. Pp. 280.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 7 NEW YORK, WEDNESDAY, OCTOBER 1, 1924 WHOLE NO. 2290

Idle Thoughts on Medical Education*

GORDON WILSON, M.D.,
Baltimore

Those of you who have lately reread *Alice Through the Looking Glass* will recall her conversation with Humpty Dumpty on the use of words, and his scornful statement, "When I use a word it means just what I choose it to mean—neither more nor less." I have followed his illustrious example in my use of the word "idle" in my title, and would have it mean that the thoughts were not based upon thorough research in the subject but were incidental to an active interest extending over a period of a quarter of a century in which I have read what came to hand and have taught in clinical courses to a generation of students.

In order to understand present conditions it is necessary to know what might be called the life history of medical education in this country and for the purpose of study, its growth and development might be divided into three periods.

First "the clinical-anatomical," or "preceptor" period, which started shortly after the revolution, (although the first medical school was founded in 1765) and took its inspiration from the English and Scotch schools. At this time medical education consisted in "reading medicine" with a doctor as one "read law," and from this there grew a partnership of doctors in order to better teach a larger group of students and was the beginning of what we now speak of as the proprietary medical schools. The scientific foundation at this period was anatomy, and quite naturally the teachers were the surgeons who had studied in London and Edinburgh, notably Physic, Nathan Smith, McDowell and the Warrens.

The second period began with the return to this country of those Americans who had studied under Louis and Laennec, and "clinical-pathological" might well designate the prevailing fundamentals of this age, and it was from Paris that the inspiration came that made the old world look to the new for the first time for medical knowledge. This second period began about the middle of the century, and its outstanding figures were the internists, Gerhardt, James Jackson, Jr., Austin Flint and Osler.

The third period had its birth in the new path blazed by Pasteur and developed by the German school under Koch and his students. This last period can be well called the laboratory period, and, for the first time in American medicine, the clinical side became subordinate, not only in the title of the period, but in medical education.

MEDICAL SCHOOLS DURING THE FIRST PERIOD

In the first period there was founded, not only the proprietary schools, but also a few schools that might be termed university in character, such as the medical school founded in conjunction with Harvard (1782). The growth of the country was during this time relatively slow as compared with the second period, and the increase in medical colleges was equally slow as compared with this second period when there took place the rapid development of the West, and with it came the demand which resulted in the almost inexcusable mushroom-like growth of medical schools during the last decade of the last century, and the first few years of the present one, culminating in a grand total of 162 schools existing in 1906.

Closely following the birth of the science of bacteriology and immunology came the rapid development of physiology and chemistry, and with the recognition of the importance of these sciences in medical education arose the need of laboratories with expensive equipment, costly to maintain, and manned by teachers who must be paid a living salary and could not look to consultations with their students for their means of livelihood.

It was at the beginning of the last quarter of the last century that certain leaders of our profession awoke to the fact that there was need for the state to scrutinize the diplomas of the increasing number of doctors graduated each year, and then began the examination of physicians by the state board of examiners prior to licensing.

DISAPPEARANCE OF PROPRIETARY SCHOOLS

With the establishment of the expensive laboratory preclinical years came the rapid disappearance of the proprietary schools whose existence had depended upon the fees paid by the students which now failed utterly to meet the cost of conducting these schools, and there remained only those medical schools supported by private endowment on state aid in whole or in part, with the result that today there are only sixty Class A schools graduating physicians.

*Presidential address delivered at the annual meeting of the American Climatological and Clinical Association, May 1, 1924.

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REQUIREMENTS FOR ADMISSION

From a time when there was no requirements for admission to a medical school there has developed in my lifetime such demands in premedical education that the average age of graduation today is four years older than it was twenty-five years ago. There is no question that there was, and is, a need for proper educational qualifications preparatory to the study of medicine, but there is some question as to whether the present requirements are not too rigid, and I must confess that I, personally, would prefer that the students that I have to teach had been required to take a course in logic and psychology rather than French or German, and I feel quite sure that it could not be of less use to them in after life than is the French or German now required.

NUMBER OF TEACHING HOURS

In this same twenty-four years, or perhaps a little more, the medical course has grown from two terms of six months each to four terms of eight months with a sharp dividing line separating the first two years devoted to the laboratory sciences, and the last two years to the clinical arts. With the rapid growth of the laboratory sciences, there has been a corresponding development of specialties with the result that today in many schools the student is in the class rooms, laboratories or wards from half past eight in the morning to half past five in the afternoons, and frequently even the supposed Saturday half holiday is taken up by a clinic in a nearby (?) insane asylum or hospital for consumptives. In spite of this stupendous increase in teaching hours every department is clamoring for more time to teach the student when the poor man is so mentally tired that he cannot digest the facts given, that tomorrow may be discarded theories.

PRESENT CONDITIONS UNSATISFACTORY

Today the increasing number of articles on medical education show that conditions are unsatisfactory. What is the solution? Is it whole time clinical heads of departments? Is it elective courses, and if so in what years should such election be allowed, and to what extent? Is it in doing away entirely with didactic teaching, and substituting entirely case teaching? How can correlation in teaching be brought about, and what is its value? Ought we to put more clinical teaching in the first two years and more laboratory work in the last two? Shall we add one more year to our present four year course in order that a little of the clamoring shall be stilled? All of these questions have been brought up as well as many others, and they show that medical education today is in a period of flux, and one is not quite sure that the outcome will be satisfactory.

It is almost axiomatic that the greater the number of drugs recommended in treatment the less is known of the etiology, and applying this to medical education we realize we are treating symptoms with these therapies and have failed to search for the cause of the condition.

PROPER ORGANIZATION IMPORTANT

In war, and in peace, success depends not only upon the unification of command in proper leaders, but also upon proper organization, and the great industries of this country have demonstrated this to the world, and perhaps we can learn something from them as they learnt something from us when they established research departments, but they did not make the head of the research department the president of the corporation. Perhaps the solution of the question may be found by asking what is the object of a medical board, and the answer is found in the product of a medical school and at once we get the answer that over seventy-five per cent. of those graduating become practitioners, a small number specialists, a still smaller number teachers, and a few, with the divine spark, become that small coterie who advance the science by research. This last group are the great artists of medicine, and like the great artists of the world are never made by teaching the common clay, but are born and achieve greatness frequently in spite of the lack of facilities.

A commercial organization properly organized would devote its capital and its plant to its different products in proportion to their relative quantity and value, and perhaps if we were to ask advice from the industrial world we would be told to follow their example. With these facts before us we can frame a definition of what is the object of a medical school that will clearly set forth our raw material and our finished products, with their relative value and our means of manufacturing that permits a maximum use of plant.

OBJECT OF A MEDICAL SCHOOL

The object of a medical school is to educate properly qualified men and women to become practitioners of medicine, and in so doing to give them the foundations whereby with further study they may become specialists, teachers, or research workers. With this definition before us we are in a position to see that the teaching in all departments, especially of the clinical years conforms to it, and the poor medical student no longer has to learn the technic of a cystoscopic examination, but simply the indications for it and its limitations.

Having defined what is the object of a medical school, it might be advisable to realize that a medical school is a *professional* school and not a postgraduate school, terms not synonymous in spite of the authority of many inaccurate thinkers, and with this realization the proper position of research at the expense of knowledge of fundamentals is at once evident, both for the student and the teacher.

LABORATORY SCIENCES CONFIRMATORY

A third cause, perhaps, for our unrest today is the failure to realize that the laboratory sciences are confirmatory rather than diagnostic and might be compared to a superior court where relatively few cases are taken, and where the decisions are not always for or against the plaintiff, but frequently the court sends back the case to the lower court for retrial.

Idle thoughts rarely in themselves, or their author, accomplish much, but at times they do stimulate, and today in medical education there is need to stimulate the proper teaching of clinical medicine, founded not on theories but accepted facts, to the end that humanity may suffer less.

4 East Preston Street.

Surgical Treatment of Angina Pectoris*

With Report of One Case

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In 1899 Franck (1) suggested resection of the left cervical sympathetic ganglia for the relief of the pain of angina pectoris. He found that the typical distribution of the pain of angina makes it certain that the paths of conduction of the pain are through the cervical sympathetic trunk and ganglia and the posterior roots of the related spinal nerves.

Jonnesco of Bucharest was the first to act upon the suggestion of Franck. In 1920 he reported the cure of a case of angina pectoris by resection of the left cervical sympathetic. The patient was operated upon in 1916.

Coffey and Brown of San Francisco (2), reported five cases of angina treated by resection of the left cervical sympathetic with marked improvement in four cases and death in one case.

Wenckebach (3) in a lecture on angina pectoris delivered in this country last summer stated that five patients had been operated on in this clinic under the care of his assistant, Eppinger. Four patients recovered with complete relief from the angina. One died suddenly two weeks after the operation. The operation in Wenckebach's clinic was resection of the left depressor nerve as it courses up the neck in the sheath of the vagus. In the fatal case both right and left depressor nerves were resected.

Among two hundred cases of sympathetic resection for various conditions performed by Jonnesco since 1920, there were three more cases of angina pectoris, in all of which the patients were cured by the resection of one or both nerves. Tuffier, in a discussion of Jonnesco's first paper, reported three successful cases.

Halstead and Christopher (4) of Chicago reported one case this year.

This series of operations, to a certain extent experimental in character, is of great practical interest.

First, as a contribution to the elucidation of the pathology of angina pectoris; and of the anatomy and physiology of the sensory nerves of the aorta and heart—and,

Second, as the development of a successful method of treatment of this very grave and painful disease.

You all are familiar with the controversies which have waged since Heberden's first description of angina pectoris in 1768 over the pathological nature, the seat of the lesion and the cause of the pain in this disease.

The exhaustive study of angina pectoris by Sir Clifford Allbutt (5) considers at length all the factors in the controversy, and his conclusions, based upon his own very full clinical and pathological observations and a critical study of a great mass of literature from Heberden's original report down, we believe to be sound and, furthermore, at this time appear to be supported by the successful results of the surgical treatment of the disease.

The symptom complex to which Allbutt restricts the term angina pectoris, of which substernal pain is the most prominent factor, is aortic in its origin. It is excited by tension and stretching of the aorta made hypersensitive by pathological changes at the root of the vessel, either atheromatous patches or areas of infectious aortitis—syphilitic, influenzal, rheumatic, etc.

Pathological changes in the heart alone, in the myocardium, pericardium, endocardium, valves or nutrient vessels, do not cause this peculiar symptom complex. Disease of these structures gives rise to painful manifestations, but such cardiac pains have not the distinctive features and the characteristic distribution of angina pectoris. It is a fact familiar to all clinical observers that diseases of the heart, whether acute or chronic, usually pursue their course even to a fatal termination without, at any stage, being attended by an attack of angina. It also has been demonstrated that fatal angina may occur and autopsy reveal a normal heart and pathological changes restricted to the suprasigmoid area of the aorta.

It is true that exceptionally angina may appear during the course of heart disease. The significance of this is that in addition to the disease of the heart there is a complicating pathological process at the root of the aorta.

Anatomical and physiological studies have not as yet determined with certainty either in the lower animals or in man the pathway of the sensory or afferent nerves of the heart and aorta.

The positive results of section of the cervical sympathetic in arresting the pain of angina indicates that in that situation at least the pathway is along the bundle of fibres including in this nerve trunk and its ganglia.

Sympathectomy was the operation selected in all the reported cases including our own, excepting those of Wenckebach. Wenckebach from his studies looked more to the depressor nerve as the first afferent that would be the pathway of the pain.

The physiology of the depressor nerve is given by Howell as follows:

"Among the many depressor affects that have been observed on stimulation of the afferent nerve fibres one has aroused especial interest — namely, that caused by certain afferent fibres from the heart or from the aorta. These fibres in some animals—the dog, for instance—run in the vagus nerve, but in other animals, the rabbit, they form a separate nerve, the socalled depressor nerve of the heart—discovered by Ludwig and Cyon (1866). So far as the effect in question is concerned the physiological evidence indicates that the fibres arise from the aorta, and it

*Read before the American Theropeutic Society, at the annual meeting held in Toronto, June 6, 1924.

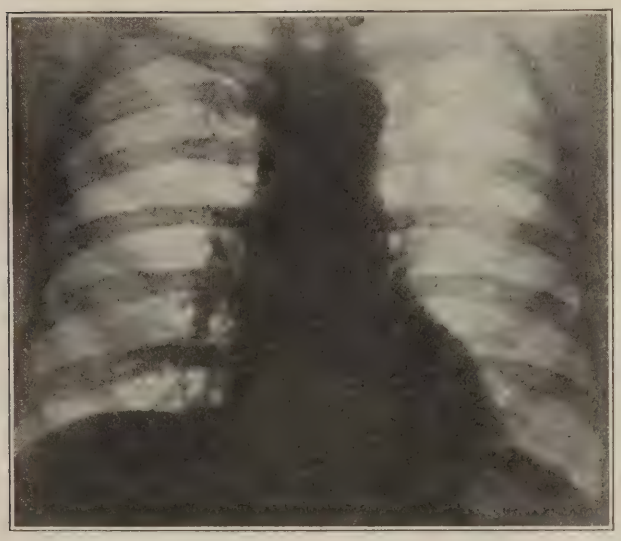

Fig. 1.—Left ventricular hypertrophy and aortic dilatation.

might be more appropriate to speak of them as the depressor nerve of the aorta. In the rabbit this nerve forms a branch of the vagus, arising high in the neck by two roots, one from the trunk of the vagus and one from the superior laryngeal branch. It runs toward the heart in the sheath with the vagus and the cervical sympathetic. The nerve is entirely afferent. If it is cut and the peripheral end is stimulated no result follows. If, however, the central end is stimulated a fall of blood pressure occurs and also perhaps a slowing of the heart beat."

Studies by David Ferrier and by Koerster indicate that the depressor is in reality the sensory nerve of the aorta.

Concerning this nerve Wenckebach says in substance:

It is true the depressor has something to do with the lowering of blood pressure, but certainly its anatomy is very vague, not only because its course is different in different animals, but also because in the same group of animals, for instance in man, the depressor nerve has individual variations. It is remarkable also that the depressor nerve runs through the same sheath as the vagus.

The operation made in Wenckebach's clinic—the details of which have not as yet been published—was resection of the depressor nerve as it courses within the sheath with the vagus. Until Wenckebach's cases are reported in full it is not possible to decide which is the preferable procedure. Apparently resection of the depressor fibres alone before they merge with the sympathetic would be better. Although it is technically more difficult, it may avoid the undesirable ocular and other side effects of section of the sympathetic fibres.

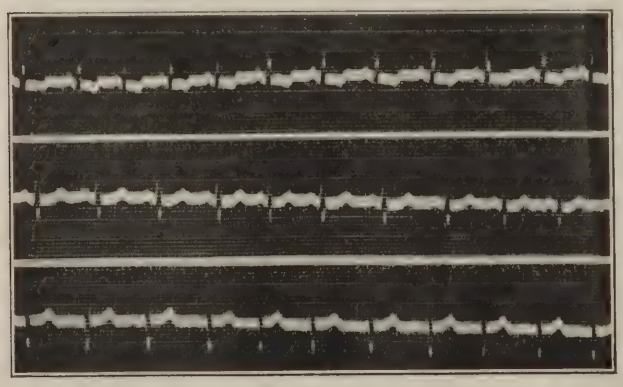

Fig. 2.—Electrocardiogram. Slurred QRS complex and inverted T wave in lead I.

Case.—Mr. E. E. M., aged forty-one, unmarried, salesman. The patient's father, F. H., died at seventy-nine from apoplexy, mother at fifty-six from mitral stenosis, one brother died from tuberculosis, one from accident, one sister died from pernicious anemia, and one from puerperal accident. There are two brothers and two sisters living and well.

The patient had had the usual childhood diseases, typhoid fever as youth, appendicitis unoperated at twenty-five, pneumonia in 1918. Bronchial asthma began 1917 after exposure to smoke in a large munitions fire. Attacks were brought on by excitement and overeating, and relieved by adrenalin, of which he took repeated doses. This became much improved after removal of tonsils and some bad teeth, and surgical drainage of infected nasal accessory sinuses. Attacks of gallstone colic occurred at intervals. In September, 1923, empyema of the gallbladder occurred and it was drained surgically.

Fig. 3.—Enophthalmos and ptosis following sympathectomy.

Arterial hypertension was first discovered in 1918. This did not subside after cleaning up many foci of infection. In May, 1922, the patient suffered a right sided hemiplegia with motor and sensory paralysis. Complete recovery occurred in several months. The angina pectoris began a few months after the hemiplegia. The attacks began rather mildly, but increased progressively in severity. The pain was precordial, radiating down the inner side of the chest, that caused anxiety more than did the pain. The attacks of pain came by periods. For a few days they would be mild and relieved by amyl nitrite. Then would occur a severe attack. From one half to three quarters grain of morphine would be necessary to quiet the pain. After this the pain would wear off slowly during the course of several days, and after a rest of a week or so he would be back at work. Between the hard attacks there would be lesser ones relieved by amyl nitrite. The pain was usually brought on by exertion, excitement or overeating. It became more and more constant and eventually completely disabling. At this stage any attempt to leave his room resulted in recurrence of more or less pain.

The physical examination showed a blood pressure varying from 180 to 220 systolic and 110 to 140 diastolic. The left ventricle was enlarged to percussion and to x ray, and the aortic arch was enlarged to x ray. The lungs showed marked hyperresonance and a few piping râles. The abdomen never showed tenderness or spasm until

the acute cholecystitis developed. The foci of infection in the teeth, tonsils and sinuses showed the usual signs which disappeared when recovery took place. The skin of the chest, upper abdomen and back between the shoulders showed a macular pigmented rash, which came and went. The fundi were normal.

The blood was negative and the blood and spinal fluid Wassermanns were negative. The blood uric acid varied from 3.7 to 4.5 mgm. per 100 c. c., and the noncoagulable nitrogen from thirty-three to forty mgm. The phenolsulphonephthalein was eighty-five to sixty-five per cent. on separate occasions and the Mosenthal test was normal. The spinal fluid showed a normal gold curve and mastic, and absence of globulin.

The x ray of the gastrointestinal tract was negative. The urine showed at times a little albumin and a few casts. Electrocardiograph showed inversion of the T wave in lead I, notched QRS complexes in all leads and inverted R wave in lead III. Frequent tracings showed no variation. One tracing was taken during an anginal attack and one during convalescence.

The patient was operated upon on April 8, 1924, by Dr. J. W. Vaughan, who made the following notes of the operation: Anesthetic administered was ethylene gas. After the usual skin preparation an incision was made along the posterior border of the sternocleidomastoid muscle of about seven inches in length. The method followed was that so thoroughly described by Jonnesco (6). The sternocleidomastoid muscle was reflected forward with the exception that the incision was carried slightly into the muscle at the superior end of the posterior margin in order to avoid injury to the lesser occipital nerve, which was exposed. The great auricular nerve was also exposed for a length of about two inches without other injury to that structure. The spinal accessory nerve was exposed as well for a distance of about one and one half inches. The greater vessels of the neck were brought into view by retracting the sternocleidomastoid muscle forward and the vagus nerve was seen running in the sheath of the great vessels. Running along the anterior surface of the longus capitis muscle a nerve was encountered whose position accorded with that of the cervical sympathetic. However, upon tracing upward and downward for a distance of three inches no ganglion could be found. Nevertheless, when this nerve was injured by pinching with forceps, the pulse rate immediately increased to 120 a minute. It was, therefore, thought that we must either have a sympathetic nerve which did not possess the characteristic text book description of its ganglion, or that the depressor nerve had been encountered after its separation from the vagus. Consequently a piece about three inches in length was excised from this nerve. The wound was then closed by means of catgut sutures and interrupted silkworm gut for the skin, no drainage being used. The operation was completed in thirty minutes.

The steps involved in this operation have been reported somewhat in detail for the reason that the resulting postoperative phenomena observed can thus be more easily explained. For the first few days there was numbness in the shoulder and behind the ear, after which the pain in these localities became quite excruciating. No anginal attacks occurred, but it could be readily seen that the stretching of both the great auricular and the accessory nerves was accountable for considerable discomfort, which lasted over a period of about four weeks. After this, sensation in these localities returned to normal. This would possibly be a good argument for the method of approach advocated by Mayo along the anterior border of the sternocleidomastoid muscle in preference to that of Jonnesco.

The period which has elapsed since the operation is approximately two months. The patient has been operated upon for a postoperative abdominal hernia, which followed gallbladder drainage for gallstones and pancreatitis. No painful anginal attack has occurred since, but upon three occasions during the first two weeks the patient complained of all the symptoms of angina except the pain. Since then there has been no recurrence of such phenomena.

COMMENT

In the foregoing are cited twenty-one cases of operation for angina pectoris with nineteen recoveries and two deaths.

In sixteen cases the operation performed was resection of the cervical sympathetic; in five cases resection of the depressor nerve. Relief of the anginal pain was more or less complete with both operations. Either operation, therefore, cuts the pathway of the sensory nerves from the pathological field in angina pectoris. Whether this field be the aorta alone as contended by Allbutt and others, or the aorta plus some areas of the heart structure, is still an open question. This question cannot be answered until the peripheral distribution of the nerve fibers severed is finally determined. The pathway of the afferent, sensory nerves from the aorta or aorta and heart to the cord and medulla also is not determined. From the success of Wenckebach's resection of the depressor nerve it would appear that in the lower neck this nerve carries all the sensory fibres, which, as shown by the equal success of resection of the sympathetic, must join the sympathetic at some point below the superior cervical ganglion.

It is too early to make positive statements as to the ultimate results of the operation. The evidence to date is that it relieves the pain of angina pectoris. There is no reason to believe that the operation will affect, one way or the other, the pathological process in the aorta or heart which excites the pain. The ultimate prognosis will depend upon the character, the extent and the progressiveness of the underlying disease. The primary atheroma or aortitis may recover, may be arrested or it may extend and involve larger areas of the aorta, the coronary arteries, the cardiac valves or the myocardium. Disaster may come from aortic rupture, aortic valve disease, coronary occlusion or myocardial degeneration.

If the theory of cardiac arrest from reflex vagus stimulation through the sensory nerves from the aorta as the cause of sudden death in angina pectoris be correct, this result may be averted by the section of the sensory limb of the reflex arc.

The immediate danger of the operation is not great.

"Jonnesco relates that since 1896 he has resected the sympathetic nerve on both sides in two hundred cases, usually including the first thoracic ganglion. The operation was done to relieve epilepsy, exophthalmic goitre, angina pectoris, migraine or for other indications. Reexamination from five to twenty-four years afterward has never revealed the slightest unfavorable influence on the heart from this total bilateral sympathectomy."

Experience also shows that the ocular and other side results of cervical sympathetic division gradually recover.

Finally, it may reasonably be stated that in certain selected severe cases of angina pectoris, which have resisted medical therapeutics and which have made life unbearable, surgical resection of the depressor nerve or the cervical sympathetic gives a fair prospect of relief from the terrible pain and perhaps offers a chance of permanent cure.

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Inflammatory Diseases of the Breast*

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Under inflammatory diseases are considered all those affections connected with the activities of bacteria in the tissues. The familiar simple engorgement and caked breast, although they respond to the same treatment as the milder infections, are not included because bacterial invasion is not a factor in their causation.

Reviewing the etiology we find that breast inflammations occur almost exclusively in nursing women, less frequently during pregnancy, in the nonpregnant and in early infancy, rarely at puberty in both sexes and in the adult male. Of the nursing women those most frequently affected are the primiparæ.

The usual organisms cultured from mammary infections belong to the staphylococcus and streptococcus groups, but many others, such as pneumococci and coli bacilli, have often been found predominating. More rarely the breast is invaded by vegetable parasites other than bacteria, e. g., the ray fungus and blastomycetes. The spirochæta pallida and tubercle bacillus are occasionally responsible for the chronic inflammatory conditions.

A break in the continuity of the nipple or the skin covering the breast is the most common portal of infection. Extending along the milk ducts or lymphatics the infection reaches the lobes or interlobular tissue of the gland. Rarely the breast is involved during the course of a septicemia or is metastatically infected from a distant focus. De Lee in 1893 found staphylococci inhabiting normal breasts and it is easy to conceive of these causing inflammation in tissues weakened by injury.

Given the portal of entry there are certain conditions which favor invasion: those which bring bacteria to the tissues and those which interfere with protective reaction on the part of the body. Among the former are lack of cleanliness in caring for the nipples, an unclean breast pump, and the presence of infection in the mouth, eyes or ears of the nursing infant. The main factors in weakening the defensive forces are illness, engorgement of the breasts and trauma in the form of a blow, improper massage or rough handling of the organ.

The types of inflammation encountered in the breast may be classified under the general headings of acute, chronic and malignant with several subdivisions.

A. Acute: 1. Ulceration of the nipple. 2. Abscess of areolar sebaceous gland. 3. Subareolar abscess. 4. Cellulitis. 5. Galactophoritis. 6. Breast abscess.

B. Chronic: 1. Chronic mastitis. 2. Chronic abscess. 3. Inflammatory conditions due to syphilis, tuberculosis and vegetable parasites other than bacteria.

C. Malignant:

ACUTE INFLAMMATIONS

Ulceration of the nipple is the result of bacterial action on an abrasion of the delicate skin in this region and is exceedingly important in its causative relation to deeper breast infection.

A collection of pus beneath the areola tends to point through its thin pigmented covering rather than extend through the deeper, more resistant structures and is known as a subareolar abscess.

Cellulitis of the breast may involve only the skin and its subjacent cellular tissue or affect the cellular tissue of the entire gland. Abscess formation may complicate both types. The diffuse variety is a probable causative factor in chronic mastitis.

A purulent discharge from the nipple may be due to infection of the milk ducts or galactophoritis. The glandular elements alone tend to become involved by extension of this process, but any degree or type of infection may result.

Abscesses are best classified according to their location as superficial, interlobular, intralobular, multilocular and retromammary. The superficial, found in the fatty tissue just beneath the skin, are due to the softening of a superficial cellulitis or direct extension from a cutaneous infection. When infection is carried by the lymphatics to the interlo-

*Service of Dr. Charles Gordon Heyd.

bular connective tissue and fat a resulting abscess is called interlobular or supramammary. Suppuration limited to the glandular elements is called an intralobular, parenchymatous or inframammary abscess. The retromammary type is caused by lymphatic or direct extension to the loose tissue behind the breast. A multilocular collection of pus may be a combination of any or all of the other varieties of abscess communicating one with another. This type is common.

CHRONIC INFLAMMATIONS

The most frequently occurring chronic condition is chronic mastitis defined by Rodman as, a chronic inflammatory process affecting the mammary gland: characterized by the formation of fibrous tissue which results in the compression of the acini and ducts, leading to atrophy and cystic formation.

Abscesses due to low grade infection may remain in the breast for years and have often been mistaken for malignancy because of enlargement of the axillary glands, retraction of the skin, or sanguineous discharge from the nipple. Such abscesses are found most frequently in women of the cancer age and may be due to the infection of a hematoma or cyst. Occurring in the retromammary space these infections, according to Lyle, are most often the result of conditions arising external to the breast such as extension from necrosis of the ribs or perforating empyema. Abscesses of tuberculous origin are not included under this heading.

Syphilis, when it appears in the breast, as it may in any stage, is diagnosed and treated in the same manner as syphilis in any other part of the body.

Tuberculosis of the breast resembles any other chronic inflammatory process but since it is rarely primary it can usually be traced to a focus in some other part of the body. Amputation supplemented by general treatment is probably the best procedure.

The rare conditions caused by vegetable parasites other than bacteria give the symptoms of a low grade infection, are unusually resistant to treatment and may be best diagnosed by microscopic examination of the discharge. The treatment is radical surgery plus large doses of potassium iodide.

MALIGNANCY

Although there is no particular type of infection classified as malignant, in thinking of infections it is well to remember that abscess and malignancy occasionally coexist as a rapidly fatal combination, and also that any eczematoid infection in the region of the nipple which resists ordinary treatment may be an early manifestation of Paget's disease.

PROPHYLAXIS

Preventive measures are most important in the treatment of breast infections. Care of the breasts cannot be instituted too early. During pregnancy the nipples should be frequently bathed, dried and coated with albolene. A soft nipple is less susceptible to injury. Deformed or depressed nipples may possibly be improved by daily gentle traction. Cleanse the nipples before and after nursing with a saturated solution of boric acid. Between nursings they may be coated with a mixture of castor oil and bismuth equal parts and be kept covered by a sterile dressing. Breast pumps, feeding shields or any article coming in contact with the breast must be thoroughly sterilized. Sore nipples must be carefully inspected for fissures which if found demand immediate treatment.

TREATMENT

Ulceration of the nipple is treated by application twice a day of two per cent. silver nitrate solution. A lead nipple shield may be worn between nursings if a sterile dressing is not feasible. To prevent trauma a glass nursing shield may be used. The slightest neglect is almost sure to result in deeper infection.

Subareolar and sebaceous gland abscesses are incised as soon as diagnosed. They are dangerous because of their location near the nipple which must be protected as carefully as possible by measures previously mentioned.

When a patient ten days postpartum complains of pain in the breast, has a slight temperature or perhaps a high temperature preceded by a chill, breast infection should be suspected. Cellulitis if superficial will show inflamed lymphatics, if deep a brawny induration of the skin is present. A purulent discharge from the nipple indicates a galactophoritis. An abscess is diagnosed by the presence of a tender mass, acutely inflamed, with or without fluctuation. If retromammary the whole breast is pushed forward by the process and its base is surrounded by an area of edema.

The early treatment of all infections is the same. A supporting binder and an icebag are applied. Massage and breast pump if resorted to in galactophoritis must be used with the greatest caution by a skilled attendant. Nursing is suspended. The patient is placed on a dry diet and given a saline purge. Fluctuating areas demand immediate incision and drainage.

Due to the arrangement of the connective tissue in the gland nearly all breast abscesses are crossed by numerous septa or are multilocular. A small incision is valueless. Superficial abscesses are treated by wide radiating incisions. Septa must be cleared away by the surgeon's finger. Rubber is used for drains.

Deep and multilocular areas of suppuration are best approached and drained through a liberal incision at the inferior thoracomammary junction. This incision first described by Thomas should be used whenever possible because: 1. It gives easy access to the entire gland. 2. It gives ample exposure and leaves no visible scar. 3. With the breasts bound up the opening for drainage is at the lowest point.

After operation wet dressings frequently changed give the best results. An autogenous vaccine may hasten recovery.

Chronic abscesses may be dissected out or drained through a thoracomammary incision. If confused with malignancy, aspiration will help to clear the diagnosis.

Chronic mastitis is usually found in both breasts, has a history of long duration, slow progress, and the mass is never adherent to the deeper structures. When sure of the diagnosis support, massage, and x ray may be supplemented by potassium iodide internally. Amputation or ablation of mammary tissue is the final resort and safest procedure.

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What the Cystoscopy of Today Means to Physician and Patient*

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One approaches a subject of this kind with a great deal of hesitancy when he realizes that little of what it really means is reaching the patient and, in fact, even the physician. For the real value of the cystoscopy of today is little appreciated by the greater number of physicians and few patients have ever heard of such a procedure. It is singular how many years are often required for some of the great advances in medicine to become common knowledge among physicians.

In this connection it is of interest to recall that cystoscopy was born in 1852; that lens cystoscopes were being used in 1868; that Edison gave us the incandescent lamp in 1876, and that three years later it was used for cystoscopic illumination. Modern cystoscopy can, therefore, be said to be forty-five years old.

We are generally credited as being a body particularly alert to seize upon everything that is truly for the benefit of the health and wellbeing of our patients. It is thought by our patients, and almost everyone is some doctor's patient at some time, that we have minds that are constantly appraising the values of methods of diagnosis and treatment and seeking to give the very best to them. They often choose us because they like us personally, and that personal admiration engenders in them a high regard for our sagacity, a deep conviction that their most valued possessions, health and life, are safest in our hands, and it is with the knowledge of such a state of mind upon their part that we accept their fees. They do not realize the utter impossibility of a single mind holding more than a small part of the sum total of medical knowledge; they only know that we are their doctors and they, thereby, place upon us a responsibility that must not be lightly carried.

If we were to consider carefully our response to such a state of mind upon the patient's part we would be surprised to find how often we have to seek knowledge upon various subjects because the public press has caused the patient to ask it of us. We know much of the use and limitations of the x ray and radium, of toxin antitoxin and of insulin, and much of it is for this reason. The laity knows much of the bronchoscope because of its dramatic presentation to them in the news of the day and they would be very quick to demand its use upon the slightest indication. On the other hand, because the cystoscope is used upon a part of the anatomy not especially featured in the public press, they do not know that there is such an instrument and cannot demand its use.

Every physician knows, however, of the cystoscope and that, where the bronchoscope is of the utmost value to one patient, the cystoscope is of perhaps equal value to hundreds and yet it is not used even a small percentage of the times it should be used. There is not a community of any size wherein its use is not indicated many, many times every year and yet, as compared with the number of workers in many less important fields of medicine, the percentage of skilled cystoscopists is deplorably small. That this is true is evident upon even the most superficial study of conditions as they exist today, and, being true, it merits serious consideration of the question from its various angles.

Before going into the reasons let us briefly consider present conditions in this regard. In the first place many hospitals in this country do not even own a cystoscope; many more own a cystoscope but have no member of the staff who knows how to use it and many more in which, though it is occasionally used, no one has done enough work with it to make his findings safe for either patient or surgeon. Further, we can name a number of towns ranging in population from a few to many thousands in which there is neither a cystoscope nor a cystoscopist; in which a cystoscopy is never done but in which bladders are opened and kidneys operated upon many times each year.

THE REAL VALUE OF CYSTOSCOPY

We are extremely fortunate today in having at our command a truly remarkable number of cystoscopes of different types which make it possible to carry out our cystoscopic procedures upon the infant as well as the adult, so that there is no age at which such a study cannot be made.

With these instruments we can distinctly see the entire inner surfaces of the bladder and urethra in both the male and female. We can with great ease pass catheters into the kidney pelves and thereby carry out close and accurate studies upon the kidneys separately, such as obtaining the urines without bladder contamination for microscopic, chemical and bacteriological studies and a determination of the actual functional capacity of each organ. By the injection through these catheters of substances casting an x ray shadow we can demonstrate the presence, position, mobility and amount of destruction of the kidneys as well as the size and contour of the kidney pelves and ureters. We can without opening the bladder remove foreign bodies of considerable size, destroy vesical papillomata before they become carcinomatous, crush calculi under visual conditions and do a host of intravesical procedures far too numerous to recite.

Consider, therefore, the ideal position of the surgeon of today compared with many years ago. He can almost detach himself from the patient's highly misleading subjective symptoms and can have before him preoperative findings of the most attractive accuracy. He need no longer cut down upon the supposedly good kidney to prove that it is there but can be shown otherwise that it is not only there but its size, position, functional capacity and the character of urine that it excretes. He thus knows whether or not he dare remove an offending organ or must of necessity conserve it.

*Read before the Tricounty Medical Society, Harrisburg, Pa., June 26, 1924. From the Department of Urology, University of Pennsylvania.

In prostatic and in bladder operations his position is even more secure for he can be led by actual preoperative visualization and can carry out his operative procedures accordingly.

All of these things and more are true and still cystoscopy stands as our most greatly neglected diagnostic procedure. To illustrate more forcibly and accentuate this statement a few of the far too many human documents in the shape of brief case reports force themselves forward. Your community as well as my own can produce countless ones that are equally striking.

Case I.—W. D. had a profuse hematuria at twenty-five years of age and consulted a urologist who knew how to use the cystoscope but did not like to do so. He was given some tablets, told to rest in bed and saw no blood in his urine for ten years. He then had a profuse hemorrhage and upon cystoscopy proved to have a large carcinoma apparently secondary to a papilloma which was undoubtedly the cause of his former bleeding. He died because the initial hematuria was not cystoscopically studied, for such a study would have revealed a papilloma amenable to destruction by fulguration and subsequent observation would have prevented unknown recurrences.

Case II.—Mrs. R. was the mother of four children and between caring for them and her home and arising many times at night to void, she had little time for rest or pleasure. Her family doctor treated her for cystitis for four years without improvement. He then sent her to a gynecologist who also made a diagnosis of cystitis and carried out bladder lavage for a year and she was no better. Finally it was decided that she might endure a cystoscopy. The cystoscopist found a contracted tuberculous bladder secondary to an almost functionless tuberculous kidney. A surgeon removed the kidney, the bladder cured itself and now she is able to get some uninterrupted sleep.

Case III.—Mary B. at twelve years of age was seized with an acute pain in the right upper quadrant. There was a high temperature, some rigidity and decided tenderness throughout the entire right abdomen. The urine contained considerable pus. An emergency appendectomy was done upon a normal appendix and the temperature still stayed high. Attention was then turned to the pyuria and a catheter passed into the right kidney pelvis evacuated a large quantity of pus and the temperature came to normal and remained there. A preoperative investigation of the cause of the pyuria would have prevented a needless operation upon the little girl.

Case IV.—H. G. had pain over the left kidney, vesical irritation and much pyuria. The kidney was large and tender and its removal was advised. A preoperative differential kidney test showed that this large, tender, painful kidney was so because the other one that had never been painful had slowly undergone a tuberculous destruction. After removal of the tuberculous kidney the pain and tenderness in the one that had undergone a compensatory hypertrophy disappeared. In other words the cystoscope saved the surgeon much chagrin.

Case V.—John A. had been unable properly to empty his bladder for some months and had had one attack of acute retention. He was sent into the hospital for the removal, because of his age, of a somewhat enlarged prostate per rectum and a large quantity of residual urine. A preoperative cystoscopy showed a trabeculated bladder that sloped very nicely down to an unobstructed outlet. Taps upon the patellar tendons showed an entire absence of knee jerks and the neurologist and the spinal Wassermann confirmed the diagnosis of tabes. He still has his prostate.

Case VI.—Mrs. W. had frequency of urination, great burning and marked pyuria. After several years' treatment by her family physician she was sent to a prominent gynecologist who did a plastic operation upon her perineum without any relief. Feeling later that he had not entirely corrected a cystocele he reoperated. From this she failed to get any relief whatever. After nine years more of agonizing bladder discomfort a cystoscopic study was thought of. This revealed a typical tuberculous bladder with advanced bilateral renal tuberculosis. As there had been no change in her symptoms during all of these years, except to become more severe, there was little room for doubt as to the original and only cause of her illness. She had gone far beyond any hope from surgical intervention.

Case VII.—Dr. X had a friend who suffered from a constant renal pain with paroxysms of ureteral colic and some pyuria. He decided, without any cystoscopic study, to explore the kidney and, not liking its looks, he removed it. Unfortunately it was the only kidney his friend had. A careful cystoscopic study would have revealed this.

Case VIII.—I. M. H. spent two years under his physician's care for frequency and burning of urination. He then entered medical college and during his first few months there had a diagnosis of colon bacillus pyelitis made because he had pyuria and there were colon bacilli present. Toward the end of his third year it occurred to him that it might be well to consult an urologist. He was then cystoscoped and found to have a tuberculous bladder, kidney and prostate. The colon bacilli were still in the urine but there were many tubercle bacilli also. Beside this, when the urogenital findings were made known, the internist found so much pulmonary involvement that he advised him to discontinue his medical course.

WHY IS CYSTOSCOPY NEGLECTED?

There are many factors entering into the correct answer to this question and most of them are easily brushed aside by explanation. For this reason it is of value to discuss briefly some of the more important.

1. There is a feeling rather general among physicians that cystoscopy is an ordeal so unpleasant, painful and fraught with such dangers that very few patients should be subjected to it. The shortest answer to this is, that it is not so. Why should cystoscopy upon the vast majority of patients be any more painful than the passage of a metal sound? It is not! But, if it were, it tells more than hours of guessing. As a matter of fact, with the proper delicacy of touch and a thorough knowledge of the urethra and its sensitive areas, one should be able to do a cystoscopic study upon almost every case with little if any real pain and usually only slight discomfort. The exceptions are in those with vesical

tuberculosis and those very rare patients with extreme urethral hyperesthesia, and here we have and use caudal anesthesia.

2. There is too much reliance upon the value of the subjective and objective symptoms of urogenital conditions. There is no place in the human body where they more often mislead. Volumes could be written upon their vagaries but reliance upon them has caused thousands of useless and illadvised operations. To him who intelligently uses the cystoscope over a long period of time there comes the conviction that they were given to the patient for but three reasons, viz., to make him consult his physician, to immediately intrigue the physician into an erroneous diagnosis, and to point the direction of careful study.

3. Many physicians have never seen a cystoscopy and have but the most vague ideas of what can be accomplished by it. They do not know that, by the use of our modern methods, the margin of error in urogenital diagnosis can be reduced probably as low as two per cent.

4. There is not enough encouragement, either professional or financial, to tempt the younger men to devote the time and attention to the subject that it really requires to become efficient in it. In every community of size some physician should be encouraged seriously to take up the subject, not as some surgeon's assistant but as the consultant of his fellow physicians, for the internist has as much need of careful, reliable cystoscopic work as has the surgeon.

5. There is a lack of general knowledge regarding the indications for cystoscopy. The cystoscope is indicated in almost every chronic condition involving the conducting structures of the genitourinary system; in every case of hematuria, most cases of pyuria and wherever a safe diagnosis of surgical renal disease is to be made. Judiciously used it will reduce guesswork to certainty, place the treatment of these diseases upon a scientific basis and will decrease the mortality and morbidity in urogenital diseases to a very attractive minimum.

6. It is the impression that there are many contraindications to cystoscopy whereas there are so few real ones that it requires but one sentence to give them. They are: very acute inflammation of the lower tract, particularly gonorrhea, advanced pulmonary tuberculosis, severe chronic nephritis and any low physical states. In the three last the procedure at times produces a physical shock that may prove fatal and, excepting the above, almost all of the rest of humanity may be cystoscoped.

WHAT SHOULD BE DONE?

Beyond a doubt the time is here when the shrewd guess based upon urological symptoms should at least be checked up by the means of diagnostic precision at hand. Among these the cystoscope and the various procedures that this instrument makes possible take a preeminent place. Without them diseases of the upper and lower tracts are shrouded in doubts of such complexity that their solution is mere conjecture and is seldom safe for either physician or patient. This being the case, I would strongly urge upon every group of physicians the great advantage of encouraging some one of their number to take up the subject very seriously. This he cannot do without their cooperation for he must study many cases to be of greatest value to them. In this connection it must not be forgotten that many of the studies are difficult and time consuming and unless our patients are impressed with the importance of his studies his remuneration is hardly likely to be commensurate with the services rendered.

In urology we have inherited a large number of fallacies from our forefathers to which we have clung most tenaciously. They may have served well then but many of them have grown very archaic and should be dropped or, at least, placed among medicine's curios. As we thus lay them away certain clinical and cystoscopic facts stand out so strongly that they should be made extremely familiar to us. With this thought in mind I am going to repeat in a brief dogmatic way some of the more important of them, realizing that there are exceptions to almost everything in life.

IMPORTANT POINTS IN CYSTOSCOPY

1. Cystitis is almost always a symptom and not a disease.

2. Frequency of urination is often the first symptom of grave disease and merits the closest study.

3. Hematuria is almost always due to a lesion of such gravity that it will cost the patient's life or health if not corrected.

4. Pyuria may be equally as important to the patient as hematuria.

5. Renal tuberculosis is usually called cystitis for several years. It is generally unilateral at first and to cure the patient nephrectomy must be done before the other kidney is involved.

6. The calculous kidney if untouched generally goes on to its destruction.

7. Pyelitis is the name of a condition that is rarely uncomplicated. It is often a transitional stage in pyonephrosis.

8. Ureteral calculi often lead to useless appendectomies.

9. The classical symptoms of vesical stone are more often due to tuberculosis or papilloma than to stone.

10. Vesical papillomata are potentially malignant but cystoscopically curable.

11. A large proportion of vesical carcinomata were initially papillomata that should have been removed then.

12. Palpation in renal disease is a fertile source of diagnostic error. The good kidney, with its compensatory hypertrophy, is more likely to be felt than the diseased one and just as likely to produce pain.

13. Pain is often as unreliable as palpation. It may be distant from the disease or upon the opposite side.

14. Middle lobe prostatic hypertrophy, though always obstructing, cannot be felt per rectum.

15. Vesical tabes gives all the symptoms and signs of prostatism in the absence of any obstruction at the vesical outlet.

Finally, few, if any of these things can be properly solved without the use of the cystoscope and its appliances and, as there is no community of size in which such conditions are not plentiful, there should be many more skilled systoscopists than there are today.

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A Clinical Study of Ten Cases of Polycythemia Vera

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Polycythemia vera is a disease of unknown etiology, characterized by polycythemia, increased blood volume, and splenomegaly. Vaquez (1), of Paris, in 1892 was the first to describe a case of this sort, but his account did not receive much attention until Osler (2), in 1903, placed the disease as a new clinical entity. Since then several hundreds of cases have been reported.

In reviewing ten cases of erythremia treated at our clinic since 1912, I wish to review in detail one case which has been under careful observation for the past three years.

CASE.—Mr. C. G., aged fifty-one, had never been strong, always subject to weak and fainting spells and excessive perspiration. The family history was unimportant except for the fact that his father was of the phlethoric type, subject to fainting spells and excessive perspiration. The patient had been free from infectious diseases except for severe typhoid in 1899. Neither tobacco, tea, or coffee was ever used to excess.

His present illness began in 1918, when, following a tonsillectomy, he had a postoperative hemorrhage, which lasted several hours. Later the removal of two teeth was followed by an attack of nausea, excessive perspiration and dizziness, but no frank bleeding from the wound. A month after the removal of the teeth a complete physical examination revealed no important abnormality. The blood count was normal. Repeated kidney studies showed traces of albumin, but no casts, pus or blood cells. The Wassermann was negative. Throughout the following year he had occasional attacks of vertigo, fulness in head, perspiration, yawning, soreness, tingling and burning in the tips of the fingers and toes. He tired easily, had little ambition, and noticed an increasing nervousness and irritability.

In December, 1919, a complete general examination again showed no definite abnormality. Red blood cells were 5,120,000; the white cells, 8,400; hemoglobin, 86. A differential count gave polymorphonuclears, 76; lymphocytes, 12; large mononuclears, 5.6; transitionals, 1.6; eosinophiles, 3.2; basophiles, 1.6.

In April, 1920, his attacks of vertigo and headaches had increased in intensity and frequency. In May, he bled profusely following the removal of an abscessed tooth. Four weeks later a bloodvessel ruptured in the left popliteal space so the limb from the knee down was bluish black, swollen and extremely painful. In August, some two months later, the blood for the first time showed a marked polycythemia. The red blood cells had increased to 10,280,000, the white blood cells to 18,800, and the hemoglobin to 140. Blood pressure was 124 systolic, 80 diastolic, the differential count remaining normal. At this time the patient showed no evidence of cyanosis but presented a palpable spleen extending two inches below the costal margin. X ray treatment applied over the splenic area resulted in a slight drop in the red and white cell count and a reduction of the symptoms temporarily.

In December of the same year, x ray treatment was again applied to the spleen and the long bones, and this was followed by a reduction in count to red blood cells, 8,020,000; white blood cells, 14,000; hemoglobin, 95. The differential count showed a slight excess of polymorphonuclears and a reduction of the lymphocytes.

During the next three years the patient's condition remained practically the same. Below is a series of blood determinations which the patient, having kept accurate data, submitted to us. On two or three occasions during this time blood letting was done for the relief of distressing symptoms.

BLOOD COUNT

Date	Hemo.	Red cells	White cells	Neut.	Lymp.	L. Mono	Trans.	Eosino	Baso.
Dec. 12, 1919.....	86	5,120,000	8,400	76.0	12	5.6	1.6	3.2	1.6
Aug. 24, 1920.....	140	10,280,000	18,800	76.2	17	2.4	1.0	2.2	1.0
Oct. 29, 1920.....	142	10,470,000	13,900	76.2	17	2.4	1.0	2.2	1.0
Nov. 27, 1920.....	135	10,080,000	11,800	80.4	12:8	.4	.8	3.2	2.4
Dec. 17, 1920.....	108	9,960,000	18,600	80.4	12:8	.4	.8	3.2	2.4
Dec. 27, 1920.....	95	8,020,000	14,000	80.4	12.8	.4	.8	3.2	2.4
Jan. 20, 1921.....	100	9,020,000	16,400	83.2	10.2	1.4	1.0	3.6	.5
Feb. 1, 1921.....	100	9,000,000	16,400	83.2	10.2	1.4	1.0	3.6	.5
Feb. 9, 1921.....	115	9,725,000	19,600	80.0	11.0	.5	.5	4.5	3.5
Mar. 1, 1921.....	110	9,670,000	16,000	80.0	11.0	.5	.5	4.5	3.5
May 3, 1921.....	135	9,500,000	9,000	80.0	11.0	.5	.5	4.5	3.5
June 10, 1921.....	155	10,320,000	14,600	80.0	11.0	.5	.5	4.5	3.5
Oct. 15, 1921.....	155	10,340,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
May 16, 1922.....	155	10,912,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
May 23, 1922.....	155	9,216,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
June 8, 1922.....	155	8,785,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
June 20, 1922.....	155	8,535,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
July 31, 1922.....	155	8,300,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
Oct. 12, 1922.....	155	9,200,000	13,200	69.5	20.0	1.5	2.0	6.0	1.0
Jan. 23, 1923.....	216	10,160,000	16,000	69.5	20.0	1.5	2.0	6.0	1.0
Feb. 6. 1923.....	210	10,000,000	14,000	89.0	2.0	3.0	2.0	4.0	1.0
Feb. 21, 1923.....	186	9,080,000	12,500	89.0	2.0	5.0	2.0	2.0	1.0
Mar. 19, 1923.....	180	8,900,000	13,000	87.0	3.0	6.0	1.0	3.0	1.0
May 18, 1923.....	144	7,280,000	23,400	86.0	7.0	4.0	.0	3.0	1.0
June 12, 1923.....	140	6,980,000	18,000	86.0	1.0	11.0	.0	2.0	1.0
Sept. 26, 1923.....	100	11,050,000	19,600	75.0	1.0	11.0	.0	2.0	4.0

URANALYSIS:

Feb. 7, 1923: A. M.—Clear; amber; acid; sp. gr. 1.012: P. M.—sp. gr. 1.016. Trace albumin in both specimens; no sugar or bile; rare hyalin cast in both specimens; no blood pus, crystals; rare epithelial cell.

May 7, 1923: Cloudy; amber; acid; sp. gr. 1.018; trace albumin; no sugar or bile; rare hyalin cast; no pus, blood or crystals; few epithelial cells.

The patient consulted us in September, 1923, just three years after his original examination, complaining of a definite increase of his symptoms; i. e., headache, fullness in head, dizziness, excessive perspiration, tingling and numbness in hands and feet, and constipation.

The physical examination showed his nutrition to be poor; height, five feet ten inches; weight, 140 pounds. The skin was soft and flexible; lips and mucous membranes markedly congested and bluish in color; tongue large, red, and congested. The pupils were small and regular, reacting well to light and accommodation. The fundus examination showed a moderate arteriosclerosis with deeply injected vessels. There was some clubbing of the fingers. Examination of the chest, including radiograms, showed no evidence of any abnormality in the lungs. The heart was not enlarged, and the aorta was practically normal. A physical examination of the heart did not reveal anything abnormal. The liver extended one

inch below the right costal margin. The spleen came two inches below the left costal margin and was firm to the touch. Repeated Wassermann tests were negative.

A chemical examination of the blood, in terms of milligrams per 100 c. c., showed: nonprotein nitrogen, 35.2; uric acid, 4.9; urea, 11.3; creatinin, 2.3; blood sugar, 90; cholesterol, 100. The urine contained small amounts of albumin and negative microscopical findings. The blood count showed the following: red blood cells, 8,150,000; white blood cells, 23,700; hemoglobin, 105.

The differential examination gave: polymorphonuclears, 90; small lymphocytes, 1; transitionals, 2.5; eosinophiles, 4; mast cells, 1. Coagulation time was seven minutes. The red blood cells varied in size and shape, showing few poikilocytes and many myelocytes. Examinations of urine gave the following results: quantity, 35 to 40 oz.; reaction, acid; specific gravity 1.012; small amounts of albumin constantly present; no casts, pus or blood cells.

On October 22d therapeutic doses of x ray were given over the spleen and the ends of the long bones. Benzol, five minims in capsules, was given internally three times daily, starting with five minims for each dose, with an increase of one minim a day a dose, until fifteen minims at each time was reached. After six weeks the benzol was discontinued, as it had no apparent effect on the blood and the symptoms remained practically unchanged.

The cause of polycythemia is unknown. Richards and Herman (3) recognize three types: 1. that described by Vaquez and Osler, which shows a normal blood pressure and enlarged spleen; 2, a normal blood pressure but no palpable spleen; 3, the type described by Gaisböck, lacking a palpable spleen but showing a definite hypertension. In our series six cases belong to group 1, one case to group 2, and two cases to group 3. One case, showing hypertension with splenic enlargement, cannot be classified by this method of grouping.

The theories as to etiology are many. At the present time a number of writers consider that the disease is due to a primary irritation of the bone marrow. Examination of the blood in most instances shows evidence of marked activity on the part of the bone marrow, by the appearance of irregularities in the size and shape of the red cells, occasionally nucleated reds, the presence of myelocytes, and an absolute increase in the leucocytes, particularly the polymorphonuclears.

Pribam (4) believes the disease may be due to a lack of normal erythrocyte destruction on the part of the liver and the spleen or even in the blood itself. Bence (5) considers that polycythemia is due to a decreased capacity of the hemoglobin for oxygen. Rendu and Widal (6) think it is due to a primary tuberculosis of the spleen.

The disease is commonly seen during the years between fifty and seventy. The youngest of this series was thirty-six and the oldest sixty-eight. Men are much more frequently affected than women. In our series of ten cases, eight were men and two women.

Three characteristic signs of this disease are cyanosis, polycythemia, and splenomegaly. The cyanosis is not constant. Osler (7), in 1918, called attention to the fact that there may be considerable variation in the color of people, depending on the condition of the cutaneous vessels and the rate of blood flow. The reddish cyanotic appearance, which is usually seen in the face, hands, and feet, is apparently not directly associated with the increased red blood cells. In our series there was no relation between the depth of color of the extremities and the variation in blood count.

From a diagnostic viewpoint some of these patients show little or no cyanosis, and may even present pallor; so, unless a blood count is taken, such cases remain undiagnosed. In nine of our ten cases the cyanotic appearance of the skin and the mucous membranes was noted in the histories.

Christian (8) was the first to draw attention to the predominance of nervous symptoms which are often the cause of the patient's seeking medical advice. In eight of our cases neurological symptoms predominated, such as headache and fulness in head (eight cases), numbness and tingling of the extremities (three cases), paralysis (two cases), yawning (two cases) excessive perspiration (one case). Constipation is generally present. Other symptoms complained of are loss of weight, exhaustion, hemorrhages, indefinite pains in the epigastric and the left hypochondriac regions, and so on.

Splenomegaly is one of the important features of polycythemia. As a rule this enlargement is only moderate, but occasionally the spleen may extend beyond the umbilicus.

The basal metabolic rate was estimated in six cases, four ranging from plus 8 to plus 24; the other two cases were slightly minus, but within the normal variation. An increase has been reported as characteristic of erythremia, but, unlike the hyperthyroid cases, there is no corresponding increase in pulse rate or respiration.

The blood shows a persistent and absolute increase in the total number of erythrocytes, varying from six to 15,000,000. The highest count in our series was 11,050,000, with a hemoglobin of 100. Four months previously the same patient had a hemoglobin of 216 with a count of 10,160,000. There is usually a slight excess of hemoglobin present. The color index was usually less than 1. The leucocyte count was generally increased, and in one case it was found to be 29,000. The differential count showed a slight excess of the polymorphonuclear cells. The blood volume was increased above the normal. Coagulation time was normal. The viscosity was tested in one case by the method of W. R. Hess and gave a reading of 7.6, showing a marked increase above the normal. The fragility of the red cells was not tested. Freund and Rexford in a careful investigation report the fragility as normal, and the blood cells in normal and polycythemia patients are equally resistant to hemolysis.

An ophthalmoscopic examination was made in five cases, four of which showed constant changes, dark colored dilated retinal veins. One case had marked tortuosity of retinal vessels.

Postmortem findings reported by various authors have revealed an extreme distention of all the minute vessels with blood. The medium sized arteries show moderate sclerosis. There is generally some hypertrophy of the left ventricle. The spleen shows enlargement without any marked pathological change

The splenic pulp is increased, and in some cases the trabeculæ and septa are thickened. The most marked change occurs in the long bones, which have a uniformly dark purple appearance, which under the microscope shows signs of extensive activity.

Gorham and Myers (9) stated that normally the concentration of cholesterol is nearly the same in the plasma and the whole blood although if anything the plasma content is slightly high, and pathologically it seems to be subject to somewhat greater variation, the normal value being 0.16 to 0.17 per cent. with a variation ranging from 0.13 to 0.19 per cent. Rothschild and Telsen considered that the liver is the regulator of cholesterol metabolism of the body, the cholesterol being kept at a more or less constant level by excretion of cholesterol through the bile.

W. Denis (10) noted subnormal values in primary and secondary anemia, but was unable to find any definite relation between the number of corpuscles or hemoglobin percentage and the cholesterol value in such cases. Pribam (11), who also found high values for cholesterol, believes that in erythremia the high cholesterol content in the serum prevents destruction of the red blood cells by the spleen. Lowry (12) corroborates these findings, and his conclusion is that increased serum cholesterol prevents red blood cell destruction and the piling up of old red cells in the blood stream acts as a stimulus to the blood forming marrow with a consequent appearance of immature red cells.

Richards and Herman (13) report a case of polycythemia with a blood cholesterol of 0.312 per cent. The cholesterol content of the blood was estimated in two of our cases. In these our findings do not agree with the authors above mentioned. In one the cholesterol was distinctly subnormal, while the other was within the normal range, 0.100 per cent. and 0.140 per cent.

Erickson (14) and others have reported an increase in the blood uric acid in polycythemia vera. Isaacs (15) reports a case with a uric acid estimation of 6.9 mg. and three months later 8.59 mg. He concludes that, in the absence of renal involvement, the increased uric acid may have its origin in the liberated nuclear material in the increased production of red cells, from the extrusion or dissolution of the nuclear material of the normoblasts at their place of origin.

Loeper and Marchal (16) compare five cases of polycythemia in which digestive disturbances dominated the clinical picture. The symptoms in some cases simulated gastric ulcer. They concluded that every dyspeptic inclined to phlethora should always have a blood count taken and the viscosity measured.

TREATMENT

The etiology remaining obscure, our treatment of the disease is necessarily empirical. We have, however, several therapeutic measures which give symptomatic relief.

1. *Venesection* produces temporary symptomatic relief but no permanent benefit. If we consider the disease to be due to a primary hyperplasia of the erythroblastic and the leucopoietic tissues of the bone marrow, then our treatment must be directed at the source with a view to inhibiting the formation of the erythrocytes. We have some evidence that the spleen is destructive in its action, destroying the red cells by the phagocytic action of the cells of the spleen. If this splenomegaly, then, is wholly compensatory, therapeutic x ray treatment should be given in stimulating doses.

2. *Rays.*—Stengel (17), in 1917, was the first to treat polycythemia by applying x ray therapy to the long bones. We agree with Bothner (18), Pendergrass (19), and Krumbhaar (20) that radium therapy should be directed first to the terminal ends of the long bones, in destructive doses, in an effort to prevent erythropoietic production; second, in stimulating doses to the spleen to promote erythrolysis.

3. *Splenectomy.*—Several writers have reported temporary favorable results by splenectomy, while others hold it to be contraindicated. W. J. Mayo, (21) recently mentions a case in which splenectomy was performed with relief of all symptoms for a period of two years. The red cells remained around 6,000,000 and the hemoglobin higher than normal. The relatively few cases reported in the literature do not permit further comment.

4. *Medication.*—At the present time we have discarded all drugs with the exception of benzol. The use of benzol was suggested by Selling (22) and afterwards made practical by Von Karany (23). McLester (24) reports cases treated by benzol which showed complete, although temporary amelioration of all symptoms. Other observers do not report the same results. It is now generally conceded that benzol combined with x ray or radium gives the best results. In three of our cases stimulating doses of x ray to the spleen were given with destructive doses to the ends of all the long bones while five minims of benzol were given three times daily, increasing one minim each day until fifteen were taken and then continued for one month. The results in two cases were good, but the third failed to respond.

This résumé is given in an effort to correlate the clinical evidence in ten cases of polycythemia which appear to us as interesting.

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Renal Infection*

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Renal infection is one of the commonest diseases with which the urologist has to deal. It is a condition that he is most concerned about avoiding; one which he constantly has to treat, and is the disease which is accountable for most of the deaths occurring in connection with any of the diseases of the genitourinary system.

The route of invasion in renal infections has generally been accepted as being by way of the blood stream, yet there are instances most difficult to explain on this ground, and which from all clinical and even theoretical considerations, suggest that ascending infection has occurred. Because of such suggestive clinical evidence, and because of the inconclusive data concerning the ascent of infection along the ureter, one of my associates, Dr. Roger C. Graves, engaged in an extensive investigation of the problem, while in charge of the Surgical Research Laboratory of the Harvard Medical School. A portion of this work has been published recently (1), and will be briefly outlined at this time.

There are three conceivable possibilities in the ascent of infection from the bladder to the kidney along the path of the ureter.

1. Lymphatic extension through the ureteral wall. Anatomy denies this route because there is no continuous lymph stream between bladder and kidney. Furthermore, experimental work has failed to conclusively demonstrate such a path of ascending disease.

2. The extension of infection along the lumen of the ureter, through, and against the column of descending urine in the presence of disease of the intravesical segment, so that the bladder and kidney pelvis are in open communication. This passive ascent needs no further comment, and occurs only in advanced stages of urinary tract pathology.

3. Extension of infection along the lumen of the intact ureter, in which bacteria are carried upward through the force of bladder regurgitation.

Beginning with Semblinow in 1883, it has been repeatedly demonstrated in the laboratory that regurgitation of vesical contents may be produced in normal animals. Moreover, in 1916, Kretschmer, in a series of cystograms in individuals without urinary tract disease, found in some instances that a reflux of the opaque solution into the ureters was revealed in his x ray plates. In spite of these important observations, no work has been done to determine accurately the factors which produce this phenomenon, and the conditions under which it occurs. With the purpose to answer these questions, the research of Dr. Graves was undertaken.

Experimental methods consisted, briefly, in slowly filling the bladders of normal rabbits with body warm physiological salt solution, through a catheter tied within the urethra. The animals were anesthetized with urethane, which gives analgesia but does not interfere with the tone of smooth muscle. The experiments were performed within a thermostat chamber maintained at body temperature, and an abdominal incision, in most instances, made possible the exposure to view of the urinary organs. A mercury manometer in communication with the filling system, recorded intravesical pressure. The physiological saline solution used in filling was colored with small amounts of methylene blue for the purpose of increased visibility. Bladder distention was not carried beyond physiological limits, and excessive pressures were not engendered.

In the first series seventy-five male rabbits were studied by this method, and an effort was made to simulate as closely as possible normal vesical distention. Regurgitation of vesical contents into the ureter was observed in 73.7 per cent. of the cases, and in the second half of the series, with a more established technic, reflux occurred in 86.8 per cent. of the cases.

A typical experiment has been reported as follows:

At the beginning of the bladder filling both ureters presented vigorous peristalsis. When ten c. c. had been introduced the ureters were still active, and the bladder was resisting distention actively, as shown by its tense cylindrical form. Pressure: five mm. mercury. With twenty c. c. the pressure was nine mm. mercury; the bladder was quiet, and both ureters were active; twenty-six c. c.: a sudden rush of a blue column of fluid was observed pouring from the bladder into the left ureter, and filling its lumen to the kidney. Similar regurgitation soon followed on the right side. Pressure: eighteen mm. mercury.

All possible sources of error in these observations were carefully controlled. For example: many types of anesthesia were used, and in many instances the abdominal wall was left entirely intact until the close of the experiment.

A study of the results of this socalled normal series revealed the fact that two types of bladders were encountered. In some of the cases the bladders filled passively, with no resistance to distention. In these toneless bladders the pressure finally engendered was purely mechanical tension, produced because the sac could hold no more. In such instances regurgitation never occurred. In other cases, however, the bladder with relatively small amounts of fluid, actively resisted distention, with tonic contraction of the vesical musculature, and in these cases, with the active pressure thus produced, reflux was usually obtained. The one fundamental requisite, therefore, of this phenomenon, would appear to be active tone of the bladder musculature.

In the second series, the experiments were performed upon thirty-eight rabbits whose ureters had been disturbed in previous operations. In some of these animals the ureters had been completely obstructed; in others, partial obstruction was accomplished with aluminum bands; in still others the ureters had been doubly tied and cut across; and in five cases the kidney and ureter had been dissected free from all nerve and blood supply down to the

*Summary of Dr. Cunningham's paper on Renal Infection, read before the Section in Urology of the New York Academy of Medicine.

bladder wall itself. Inasmuch as there were no essential differences in the production of regurgitation under these conditions, it was concluded that the degree of ureteral activity had little bearing upon the phenomenon. This is in sharp contrast to the beliefs of earlier workers, who were inclined to ascribe reflux to peristaltic or antiperistaltic ureteral contractions. It should be noted that in this work antiperistalsis was never observed, and has no part, therefore, in the problem of regurgitation.

In another series the experiments were performed upon normal intact unanesthetized animals, observations being made possible by the fluoroscope. In these cases sodium bromide solution was used for bladder filling. Six of the eleven animals studied by this method showed regurgitation under the fluoroscope, and x ray plates were taken for permanent record.

From the foregoing evidence it may be concluded that regurgitation of vesical contents into the ureter may be accepted as an experimental fact, and as a clinical probability, and that it may be held accountable for ascending renal infection, particularly in cases of vesical neck obstruction. Further experimental and clinical reports are to be made.

The following clinical observation is one which we have frequently noted, and I have no doubt is also familiar to all present. A person whose ureteral orifices have been previously determined to be normal by cystoscopy, has a suprapubic prostatectomy performed. The convalescence has been uneventful, and the temperature has been normal. The suprapubic drainage tube has been removed, and just at the time when the sinus closes, and before the normal act of urination has been well established, there occurs a chill, followed by a sudden sharp rise in temperature, and the usual symptoms and signs appear, which we recognize as renal infection, and commonly call pyelitis. In this situation under discussion there has been no change in the condition or treatment of the patient prior to this phenomena, and no new areas for absorption have been produced by instrumentation, or in other ways, which might make probable a blood stream infection. We believe that this picture is one of ascending infection, and that it can only be reasonably explained on the basis of ureteral regurgitation.

This clinical picture not only occurs in the postoperative course of prostatic patients, as discussed above, but the regurgitation of infected urine may also take place and give rise to the same clinical phenomena during bladder drainage, with an indwelling catheter which becomes temporarily blocked. I believe, as we refresh our recollections, that we can all recall patients who have been doing well under catheter drainage, in whom suddenly, and for no apparent reason, there develops the familiar sequence of chill, fever, and pain in the region of the kidney. The onset of the renal infection has been evident enough, but its manner of production has not always been so readily explained, as there seems no reason that such a sequence of events should be brought about by a blood stream invasion by organisms. Often in these cases close questioning will elicit the fact that prior to the chill the patient has experienced a sense of bladder distention, produced because the catheter has ceased to drain. Under these circumstances the catheter has become an obstruction to the outflow of infected urine from the bladder, and has produced a spasm of bladder musculature, and a consequent reflux of infected urine up the ureter to the kidney.

In addition to the occurrence of ureteral reflux and renal infection under conditions which we have described, regurgitation of infected urine must be considered a factor of great importance in producing renal infection, even before any form of treatment is instituted, and may be accepted as an explanation of renal infection associated with vesical neck obstruction in patients whose ureteral orifices appear normal by cystoscopic examination.

While emphasis has been placed on the possibility of renal infection from regurgitation of bladder contents, it is not our feeling that this is the commonest route of kidney invasion. We still feel that the majority of cases are of hematogenous origin. By whatever path the kidney is infected, whether through ureteral regurgitation, or through the blood stream, the picture varies in degree from a mild pyelitis or pyelonephritis, to those more advanced conditions involving much kidney tissue, and even extensive renal destruction.

That hematogenous infection of the kidney must be considered the most common is, as has been said, not questioned. The differentiation from the ascending type is usually difficult. The absence of any vesical neck obstruction and the presence of any septic foci demonstrable anywhere in the body, naturally leads to a belief that any particular instance is due to organisms gaining entrance to the blood stream, and reaching the kidney by this path. The absence of positive bacterial findings in blood cultures in such cases does not preclude this avenue of invasion. It is interesting to note in this connection that organisms may be recovered from the blood stream during the period of the rigor associated with the onset of the disease, and following this be absent from the blood, which makes it probable that the rigor is an expression of the blood stream invasion as in some other diseases, such as malaria.

We now classify renal infections into three groups, based on the pathological findings and clinical signs. The *first* group, the most severe, is the infection of hematogenous origin which produces multiple foci of suppurative processes throughout the kidney, and which results clinically in a progressive toxemia, which may become profound and result in death. This is the form of disease originally described by Brewer. It is the fulminating type of renal infection, which is frequently confused with intraabdominal inflammations, such as acute infection of the gallbladder, ruptured duodenal ulcer, and acute appendicitis. This group of patients is more apt to be observed by the general surgeon than the urologist, because the disease produces acute abdominal signs. The urine is essentially negative, and the patient gives the general clinical picture of intraperitoneal sepsis. The only clinical sign differentiating the disease from intraabdominal lesions is costovertebral tenderness and spasm of the lumbar muscle.

I have observed thirteen patients with this form of the disease, who were subjected to nephrectomy, and two who were treated by decapsulation, together with drainage of the renal pelvis in one instance.

The thirteen patients in whom nephrectomy was performed recovered, and the two in which the less radical operation was carried out, died. It is felt that this type of the disease which produces progressive, profound toxemia, will result in death in the great majority of cases, provided the body is not rid of the severely infected kidney.

The *second* type of the disease is a diffuse, nonsuppurative inflammation, a type of infection which spreads through the kidney substance, but does not result in focal abscesses and solution of tissue. The clinical picture produced by this more common, nonsuppurative infectious nephritis differs from that with abscess formation chiefly in the severity of the symptoms. The onset may be sudden, as in the former type, the temperature rising rapidly to 102° or more, associated with acceleration of the pulse rate; and a leucocytosis is always present, often high. A chill may accompany the onset. Pain in the loin is an early symptom, sometimes indefinite, but often severe, varying according to the severity of the process. Tenderness over the kidney in the costovertebral angle with some muscular rigidity, and abdominal tenderness and rigidity on the affected side, are constant signs. The chief feature differentiating this form of the disease from that of abscess formation is the lack of progressive toxemia, and the presence of more abnormal elements in the urine. These patients, while appearing acutely ill, do not have the progressive toxic course which characterizes the first described form of the infection. The fever after the first few days following the onset may gradually subside, if the process is not very extensive, or remain more or less stationary, and may continue not unlike a beginning typhoid. Pain on the affected side may persist indefinitely, and recurrences of the acute symptoms are not uncommon. In the severer forms of this type of the disease, operative procedures in the form of decapsulation, puncture, and drainage of infected areas, have been of value in shortening the course of the illness, and giving relief from pain, particularly in the cases where persistent infection remains over a period of months, and a contracted scar in the renal tissue is the cause of the constant discomfort. I have operated upon eighteen patients of this group.

The *third* group is a milder manifestation of the nonsuppurative inflammatory process. The symptoms, following the acute onset, subside more rapidly, often assuming a more or less chronic form almost from the beginning. It is these relatively mild infections which we, as urologists, commonly deal with, and which are amenable to milder measures, such as forced fluids, urinary antiseptics, free catharsis, and in the more obstinate cases, lavage of the renal pelvis.

In conclusion, I submit that renal infections, of paramount importance to the urologist, can no longer be considered as solely of hematogenous origin. Regurgitation of the bladder contents in the presence of vesical neck obstruction has been shown to make possible an invasion of the kidney through the ureter from the lower portions of the urinary tract. The pathological processes produced by infection, ascending or hemic, may be in all gradations from simple to most diffuse, and even suppurative forms.

Treatment, as always, must be measured in terms of the disease, and varies from radical surgical intervention to the mildest therapeutic measures. Finally, wherever a nidus of infection can be discovered in tonsils, teeth, or other organs, it is of primary importance to determine such a focus and destroy it; a matter too often disregarded. Moreover, it is fundamental that the obstruction to free drainage, which has produced stasis and lowered resistance within the urinary tract, should be eradicated, for without the relief of causative factors, any form of treatment may be of little permanent avail.

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Dutch Neuropsychiatry and Its Representatives*

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(*Concluded from page* 266)

According to Bolk, the cerebellum is divided into an anterior and posterior lobe by the *sulcus primarius* which corresponds to the *fissura prima* of Smith. The anterior lobe is divided by a series of three fissures into four lobules which Bolk numbers 1, 2, 3, and 4. A small and shallow fissure parallel to the *sulcus primarius* delimits the *lobulus simplex* which extends from the vermis out upon the lateral expansion of the hemispheres. The major portion of the posterior lobe, however, that which lies caudal to the *lobulus simplex,* is divided into a median lobule and two lateral lobules. The median lobule constitutes the vermis and is separated from the lateral lobules by the two *sulci paramedian* one of which lies on either side of the vermis. The vermis itself is divided into four lobules, respectively indicated as C-2 and C-1, B and A. The fissura secunda passes between C-1 and B. The lateral lobules are divided into two main portions, the *lobulus ansiformis* and the *formatio vermicularis.* These are separated by a deep incisure, the largest fissure in the cerebellum, the *fissura paraflocculа.* The *lobulus ansiformis* is divided by a transverse fissure the *sulcus intercruralis,* into Crus I and Crus II. Where the *lobulus ansiformis* and the formatio vermicularis come into relation with the posterio

*Illustrated talk to New York Neurological Society, February 6, 1923.

nedian lobule, there is a portion of the cerebellum which Bolk defines as the *lobulus paramedianus*. He xplains the striking variations of the cerebellum on he grounds that form is dependent upon function nd there must, therefore, be some direct functional elationship between these variations in the cere-ellum and the control of the muscular system whose onic, sthenic and static activities are dependent upon his organ. He concluded that all of the muscles of he body may be divided into two groups: those which act bilaterally together, such as the trunk nuscles, and those which, although bilaterally pres-nt, have a certain independence in their activity ke the muscles of the arms and legs. The muscle roups which show this independence of action are nilaterally synergic, while those which depend upon simultaneous coordination are bilaterally synergic. o the latter group belong the muscles which pro-uce movements of the head, of the eyes, of the nouth and jaws, of the tongue, pharynx and larynx, nd of the trunk, in addition to certain movements f the upper and lower extremities which require ilateral innervation and act together as in loco-notion. Upon the hypothesis, Bolk based his local-zation in the cerebellum of control for the two ma-or groups of muscles. The cerebellar cortex is omposed in mammals of a number of coordinating enters, some of which are paired for bilateral syner-ic control, while some are unpaired for unilateral ynergic control.

"The *lobulus anterior cerebelli* contains the coor-inating centers for the muscles which are active in novements of the head. The most anterior lobule s for the eyes; the second lobule, for the tongue; ne third, for the muscles of mastication, and the ourth, for the muscles of expression and of the me side. The remainder of the cerebellum contains ne paired synergic centers for the muscles of the eck. In the upper portion of the *lobulus medianus* osterior are the paired centers for movements of ie right and left extremities. The *lobuli ansiformes* nd *paramediani* contain unpaired centers for the xtremities, the arrangement of the centers in each ase being ipsilateral, Crus I corresponding to the rm of the same side and Crus II to the leg of the me side. The remainder of the cerebelli contains oordinating centers for the trunk and the tail re-ion, the formation vermicularis particularly having ontrol of the tail.

"This localization in the cerebellum by Bolk on the rounds of comparative anatomy was subsequently onfirmed by André-Thomas and Durupt and by an Rynberk through many experiments upon ani-als."

Bolk is preeminently an anatomist and I can with ropriety leave him with but little mention of his any valuable anatomical researches, to take up a gure identified with neuropsychiatry in Holland for any years, Jelgersma, professor of psychiatry in ie University of Leyden. I met Jelgersma about 905-1906 and as he brought to my attention first work which has been one of the most enduring elights of my library, I owe him an early debt of ratitude. It is that remarkable classic by Jules oury on the History and Development of the Doc-ines concerning the Nervous System and its Func-tions, a work, for a neurologist not to be acquainted with is to drop out Hamlet from the play. When in 1910 I had the pleasure of meeting Soury in Paris it was a delight as striking as had been that on reading his book. It was from Soury that an interest in Leibnitz arose and you now know the history of a not infrequent remark made by me in this society, for Leibnitz in a foot note on the first page of his *Monadology* says "he reads a book not for what he could find to criticize in it but for what he could find new."

Jelgersma's work has been very extensive. Concerning some of the phases of modern neurology it may be recorded that Jelgersma (12) in 1908 started our modern researches upon the pathology of the striatum and its connection with paralysis agitans. He had noted in paralysis agitans marked atrophy of the lenticular fibres on their tweenbrain pathways. The reduction of the ansa lenticularis and ansa peduncularis, of the H_1 and H_2 fields of Forel, the lateral thalamic nuclei, corpus Luysii, and the radiations of the substantia reticularis. The red nucleus and pontine structures were not modified. Whereas the interpretations of the present time have moved beyond their early formulations it is to Jelgersma's credit that he noted the striatal fibre system alterations. The paralysis agitans problem is still unsolved even though our own genial Ramsay Hunt has cast some highly valuable light on certain aspects of the problem to which Lewy (13) and Bielschowsky have added their observations.

Jelgersma's contributions to the function of the cerebellum have been of marked value (14), especially in their phyletic relationships since he has made extensive investigations of cerebellar function in Cetaceans. Jelgersma has emphasized the opinion that the cerebellum has no relationship with the vegetative organs. In the innervation of the blood vessels, the smooth muscle tissue, the endocrine organs the cerebellum plays no part and he states that no connections with the sympathetic system are known. It also has no relation to smell, sight, taste or hearing. Only two feeling qualities he maintains are localizable in the cerebellum. These are deep sensibility of muscle and joint, and secondly tonus and equilibrium. Whether this position can be maintained in view of growing views implicating the sympathetic system as essential components in muscle tonus I for myself am still in doubt.

Jelgersma has given a masterly textbook on psychiatry. Written as it is in Dutch it is little known but it will repay careful study. Finally it may be added that Jelgersma has developed a strong supporter of the psychonalytical theories, which in passing it may be stated is shared by many of the younger Dutch neuropsychiaters, among whom a strong psychoanalytical group has developed.

I have already spoken of the foundation of the Central Institute for Brain Research and the appointment of Dr. C. J. Ariëns Kappers, one of Winkler's pupils as its Director. Still a young man, Ariëns Kappers has done a prodigious amount of work on the comparative anatomy of the nervous system. Even to read a mere list of his researches

would consume a whole evening. These have been most aptly and beautifully gathered together now in three large octavo volumes. The first by Droogelever Fortuyn on the Comparative Anatomy of the Invertebrates and two others by Kappers on the Comparative Anatomy of the Nervous System of Vertebrates. I have analyzed these elsewhere (Book Review, *Journal of Nervous and Mental Disease*) and many of you are acquainted with more than the title page which is here shown. Here as with Winkler, as we may gain from a short glimpse of his "Introduction," we note that Kappers follows the same note of an organizing synthesis function of the nervous system in its handling of cosmic stimuli. The naïve conception of the steamboiler-man whose stomach alone provides him with energy has little place in modern energetic conceptions of the nervous system. The "calorie" concept is too narrow for the "organism as a whole" in its highest sociotropic activities.

Humoral pathology is comparatively a dead letter for anything beyond protozoa or coelenterates. Pathology, in the sense of disturbance of a *neurally integrated mechanism,* has become the order of the day, even in some recent discussions of the mechanism of inflammation. Immunity, anaphylaxis and other concepts lack precision until they are founded upon a neural more than upon a humoral basis. But this is an aside save by implication as one of the major premises of Kappers' work. A second premise I might touch upon in my hasty review. This concerns itself with the development of a concept of structural evolution going on within the nervous system to which Kappers has given the name of neurobiotaxis and to which he has contributed a dozen or more studies. How have nervous structures come to arrange themselves as they have in the gradually increasing complexity of the animal phylum? This has been a question. Chemotactic theories relative to the positions of axon and dendrites were among the earlier types of solution before comparative structural facts were available. As these accumulated it was seen that displacements of ganglion cells and their groupings were very striking.

The chemotactic hypothesis (Cajal) does not seem to cover the situations and Ariëns Kappers made use of a term neurobiotaxis to envisage his newer concept. The process of displacement, as for instance of the cranial nerve nuclei in their phyletic series is not explicable, he shows, on plasmodesmic or chemical "forepath" hypotheses. One must pay more attention to the origin of the stimulus. Kapper's illustrations most convincingly show the gradual shifting of the oculomotor, trochlearis, trigeminus, abducens, facialis, glossopharyngeus, vagus, accessorius and hypoglossal nuclei. This shifting has taken place as the animals have evolved variations in ways of varrying on their biological functions.

The details can not be entered into here (15). I can only report upon his conclusions, namely that the neurobiotaxic phenomena are explicable only on the basis of ideas which have come to be formulated relative to psychological conceptions. In other words, as with Gaskell, who it will be recalled said that "from below up we can only guess, from above down we can interpret," so Kappers states that the psychological, i. e. advantage of the whole animal as a unit in his adjustment to his environment [head end stimulus] follows psychological laws. This is another way of saying that function is primary structure secondary. They are coordinates, but the structure can be made to change in view of the *wish* or the *need.*

My time is up and I regret that I must leave you at this point with but a partial glimpse into the entrance gateway leading into many pathways of interesting research in this small but productive country. I have only time simply to mention a few of the active workers, many of whom have given enduring contributions to the special field of our interests. A discussion of Brouwer's work could easily occupy an evening. As clinician, anatomist, pathologist and teacher he occupies a unique position and well merited his election to the chair of neurology so honorably filled by Salomonson. Psychiatry as represented by the Boumanns, of the same name but not related, is being actively advanced and from the various institutions scattered throughout Holland, masterly scientific papers are being produced. The work of the Boltons on the vegetative nervous system is also worth a word, but I must stop, rather abruptly, with the hope that I may at some future meeting supplement this introduction by a more even presentation.

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Heterotopia of Central Nervous System in Relation to Malformation of Body Segments and Nervous Diseases

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This paper is one of a series in which attention is called to evidence for the opinion that disease is a feature of evolution as well as due to the effects of environment; also, where, why and how lowered resistance, susceptibilities or vulnerabilities arise.

The data consist partly of citations from acknowledged founders of evolutionary and medical science, partly from a survey of much pathological material and in particular of certain personal experiments which go to sustain the opinion that disease is an important factor in evolution.

I would postulate that: In a full survey of the phenomena of evolution of species it will be found that a full consideration of certain anomalies of structures and deviations of growth forces in certain individuals offers a valuable—perhaps the best—explanation of phases of the evolution of disease.

Genetic problems deserve to be approached from at least two angles: a, from the centres of origin or manifestations of growth forces outward as they evolve, as well as: b, from phenomena as they are observed in relation to the centres, that is, from the periphery backward.

The query is submitted: Have these manifestations been studied sufficiently from the central approach? May not a study from the centres outward supply as much, possibly more of significance, and many facts not as yet appreciated?

Is not this approach from the centres of origin also more economic, more accurate, more sequential from cause to effect, and of greater practical utility as to possible prevention or remediation? A combination of approaches from both angles is doubtless best.

Meanwhile I present the evidence we have collected from this central avenue. This evidence consists of both a pretty thorough survey of the literature in the form of exact citations of such facts, observations, inferences, as are to be found in the writings of such men as Darwin, A. R. Wallace, Geoffrey St. Hilaire, Haeckel, Joseph Leidy, Serres, Codvilla, Boujard, and others, among which many highly significant and illuminating remarks are found. Many of these seem heretofore to have been overlooked, disregarded, or erroneously interpreted. These views are also found to have been accepted, endorsed, or amplified by later writers of highest authority.

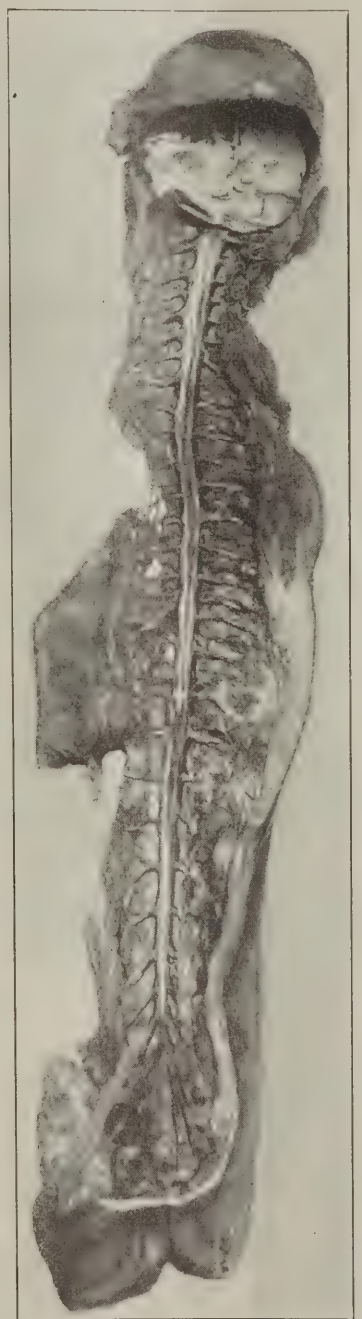


Fig. 1.—Photograph by Mr. Erwin Faber of personal dissection made by the author when prosector to Professor Piersol, in the Anatomical Department of the University of Pennsylvania, from a frozen formalin specimen chosen for its normality.

These citations we have arranged in orderly or correlated associations forming a fabric of evidence which at least deserves open minded consideration, and also: (in a later contribution with original illustrations) personal studies by me on full transections of the spinal column in embryos, bones and all. These were later decalcified and studied in accord with their original relationships. This, by the way, has not been the course pursued by the more modern students of the cord and its structure. The cord is generally removed from the bones whereby the anatomical associations are altered or lost.

Anatomical material, partly such as handled by myself and also many careful observations made on specimens presented in collections and in museums, as well as observations of skeletons in museums both modern and ancient, will be presented.

This material is of both human beings and also animals, not alone of today but also ancient, some being prehistoric. The mass of these observations is growing surprisingly. They can only be ignored by those who decline to make similar or independent observations from equally reputable sources.

Particular attention is urged upon the plan pursued of studying cross sections of the entire spinal column, bones, bloodvessels, cord, etc., thus preserving the full associations, relationships, adaptations.

Only by pursuing this plan of studying phenomena in their exact, undisturbed correlationships, is it possible to note significances as they emerge and group themselves. Only by a careful survey of the earlier literature, by giving due weight to many cautious statements and inferences can a symmetrical impression be formed. Only by pursuing the same plan can the inferences reached be disallowed or disproved.

The central canal of the cord, and a portion of it prolonged into the brain, may be regarded as originally a segment of intestine now disused for alimentary purposes and undergone gradual transformation into a spinal canal, rendering certain structures vestigial which not infrequently behave in a manner pernicious to the individual (1). The great factor in evolution has been throughout the growth of the central nervous system (2). This germ band from which the whole embryo grows, corresponds exactly to the position of the central nervous system (3). Of individuality in organisms, and of axial gradients, the relation of the central nervous system to these gradients is highly significant. Each organ or part arises in relation to one or more of these gradients (4).

The spirem is seen in the karyokinesis of all cells (5). Of the spiral, Swedenborg says, "It is capable of transformation into infinite forms, of adapting itself to every space, and hence this form derives the power of infinite variation (6). We are able to trace the mutability of individuals to the mechanical conditions of nutrition (7). The spiral type of organism owes its peculiarities entirely to mechanical conditions (8). In regard to comparison of SGR variations in humans with those of beasts, we must absolutely concede that the lowest forms (which show a tendency to curve or spiral formation) possess models in beasts, therefore the variations are in phylogenetic age direction (9).

Fig. 2.—Photograph by Mr. Erwin Faber of a transection of a frozen formalin head in the anatomical department of the University of Pennsylvania. Asymmetry of brain.

In amphioxus, (lancelet), the region of extreme torsion is around the mouth; in the posterior part of the pharynx, the parts appear and remain in normal position; during later development it becomes corrected by a compensatory growth of the pharyngeal structures in the opposite direction (10). In man, Falk describes, curvatures and malformations of the cranium (11). In a number of fishes, the want of bilateral symmetry is very striking; the body is very compressed, and on one side, is whitish or uncolored, while the other is dark; further, the eyes are both on the colored side. When they are born, they are symmetrical, with an eye on each side, and may be seen swimming in midwater, nearly straight, but with a tendency to lean to one side. The tendency to do so becomes more marked; but the eye of the inclined side disdains to look downwards, and strives to look upwards; the endeavor accomplishes its purpose, and finally it becomes settled upwards, and the contiguous parts of the skull are twisted round to correspond (12).

The skull develops in precisely the same way as the vertebral column. The right and left head plates arch towards each other over the brain bladder, enclose the anterior extremity of the chorda, and thus eventually form a simple soft membraneous capsule around the brain (13). For, we must differentiate three stages in the development of the vertebral column, membranous, cartilaginous and bony (14). It is not known how far the olfactory and optic nerves, which originate from the precordial brain, agree with spinal nerves, but all the other cranial nerves are entirely segmental (15). Abnormalities and deformities of the skull capsule will always be of the greatest importance (16).

When the neural folds are nearly closed, a slow rotation of the embryo about its horizontal axis begins; so that in the course of a few hours the embryo lies on its side and often on its back. Later it rotates constantly about a vertical or oblique axis. Such rotation of amphibian embryos has been noted by Clark, Eyedeshymer, Assheton and Wilson (17). In chick embyros, between the forty-eighth and fifty-fifth hours, the embryo quits the right position which it has had up to this time; it bends itself and inclines constantly to the left side (18). It is this inversion of position which effects the inversion of the vessels. For, in the plan above the umbilicus, the veins are anterior and the arteries are posterior: in the plan below (the umbilicus), the arteries are in advance and the veins behind (19).

In pigeons, the tumblers have the strange habit of ascending into the air in great numbers, then turning over and falling down through the air as if dead (20). Near Glasgow, there are house tumblers, as I hear from Mr. Brent, which cannot fly eighteen

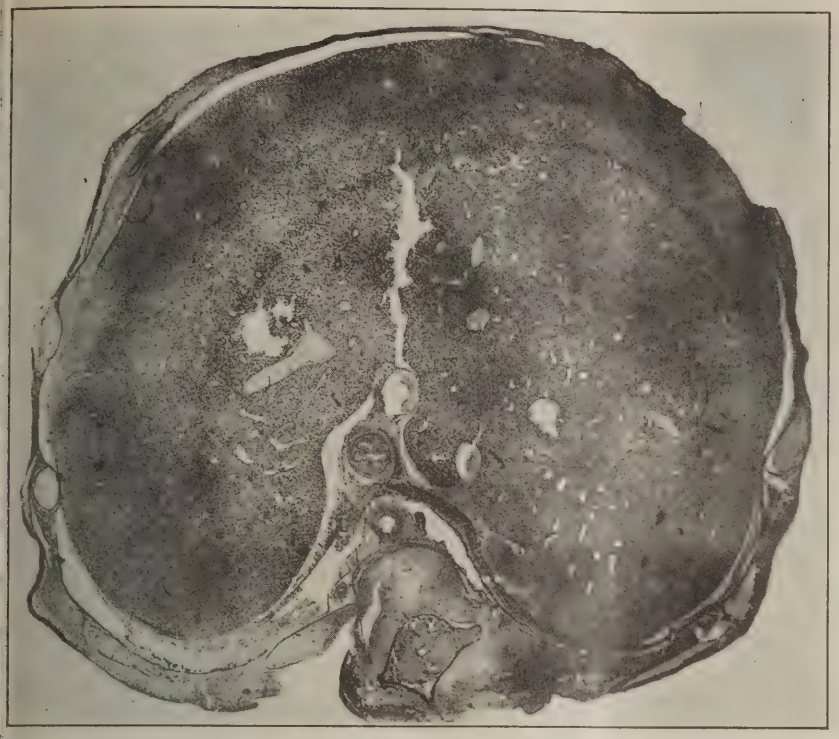


FIG. 3.—Malformation of a human embryo from embedding in the tube of an ectopic gestation. Embryo removed by the late Professor G. G. Davis. The patient recovered. Photograph by Mr. Erwin Faber.

inches high without going head over heels (21). All pigeons without exception must have been derived from the blue rock (C. Livida) (22). Pricking the base of the brain and giving hydrocyanic acid, together with strychnine, to an ordinary pigeon, brings on convulsive movements, exactly like those of a tumbler (23). Of Lotans or Lowtans, a variety of roller or tumbler, "When required to tumble, they are taken in the hand, the head slightly rubbed or filliped with the finger, and then they are put on the ground, where they continue to tumble till taken up (24).

The back somersaults that rollers throw in the air is the chief characteristic of this variety and subvarieties of pigeons. It is also undoubtedly a disease. Man selects knowingly, with an object. Nature eliminates blindly, without an object (25). Man has selected diseased tumbling pigeons, until they became a variety with subvarieties. Nature would have eliminated by hawks, scavengers which remove the weakest of the flock, had not man bred from the tumblers alone. Darwin mentions the preservation of a large number of individuals which varied in any favorable direction, and the destruction of a large number which varied in an opposite direction (26). Before it was perceived that disease is an undisputable battleground of the true Darwinian struggle for existence, the tremendous part which it takes in ridding the earth of weaklings and causing the survival of health was all credited to the environment and its dead physical forces (27). When variations, which we call disease, occur we are learning to look for the point of departure from the normal environment (28). Therefore the nonadaptive variation is the disease, and parasites are secondary to it. Every step in evolution from invertebrate creature to vertebrate fish, birds, beasts and men, has been paralleled within them by different kinds of infesting parasites (29). The decisive factor that runs through every struggle, wherein other factors are equal is disease. The survivors are those who have become modified to resist strain (30) (of bacteria, etc.). In the case of the roller or tumbler, man has selected diseased, i. e., tumbling pigeons until a new variety with subvarieties, has been established as entities.

The Rôle of Selection

Selection by nature is in the abstract, the concrete is elimination of the nonadaptive variants by microorganisms. In the evolution of species, the nonadaptive variants die from disease, and there is no difference between the evolution of species and

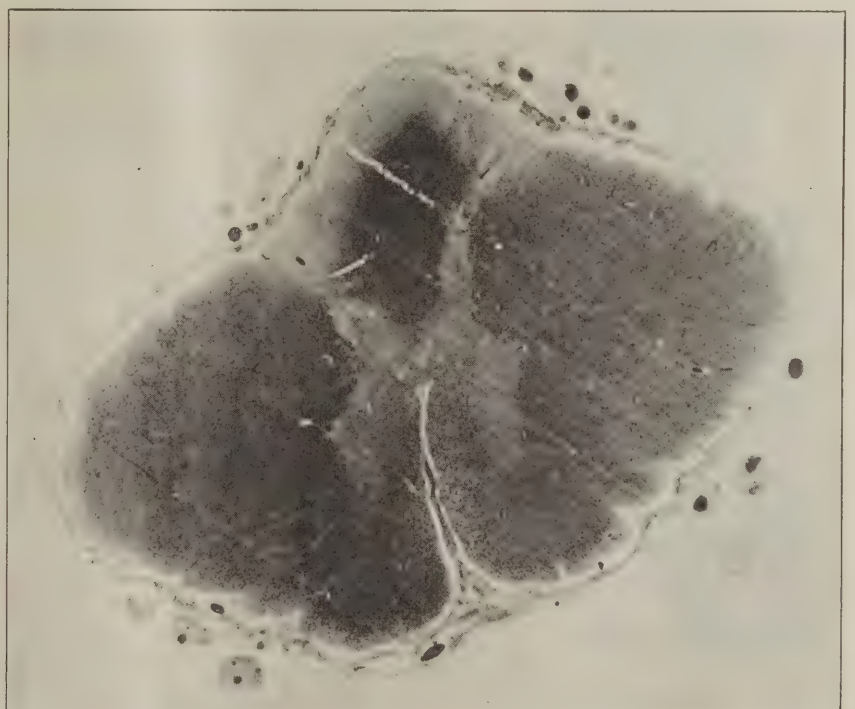


FIG. 4.—Published through the courtesy of Krumbhaar and Winkleman. Lesions of multiple sclerosis accompanying extraordinary bilateral asymmetries of the spinal cord.

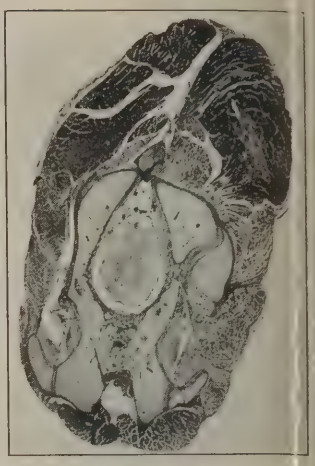


FIG. 7.—Clockwise rotation. Oblique section, though nearly mesial, of clockwise or right rotation of neck of squab.

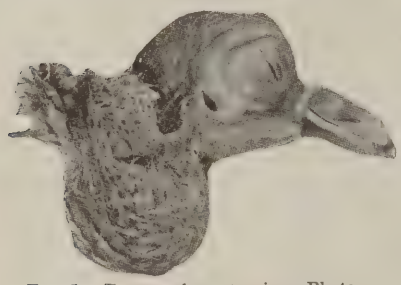


FIG. 5.—Extreme hypertension. Photographs by Mr. Gosner, mesial section by Miss Brown, permission of Dr. Krumbhaar. Flexion of the spinal cord due to flexion of the vertebral column.

the evolution of disease.[1] The one being the corollary or supplement of the other. For anomalies are equivalent to true diseases by the pernicious influence which they exercise on the organization (31). They can cause each other. Disease and anomaly are not the least different physiologically (32).

In Fig. 5 is seen a distorted, that is scoliotic, vertebra of a roller squab. The transection shows asymmetry of the vertebra and of the spinal cords. A lower level is shown in Fig. 6. The muscle of the upper part of the illustration to the left of the vertebral column is fibrous and atrophic, the liver to the lower right is more congested than the fellow of the opposite side. The spinal cord is as asymmetrical as is the vertebra. The axis cannot become monstrous without it in some way affecting the parts subsequently produced from it; so axial anomalies are nearly always accompanied by some deviation of structure in the appended parts (33). The tumbling act in the roller is voluntary, he uses it to descend before lighting, the descent being more difficult, than rising by which they avoid hawks, further they often roll in consort. Sometimes it becomes uncontrollable, and they roll from a great height injuring themselves. In the parlor tumbler it is utterly uncontrollable, an outspoken disease. In the air roller, they bring on a fit of tumbling by clapping their wings with great force a few times, then roll over backwards some for a few, some many, times without stopping.

The explanation of the disease is probably to be found in the malformation of the spinal cord. Tapping of the head, shaking it, puncturing the skull, hydrocyanic

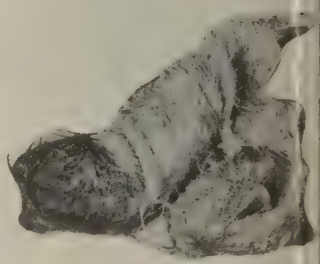


FIG. 8.—Anticlockwise rotation. Inequalities of two halves of the spinal cord due to and accompany rotary twists of the vertebral column.

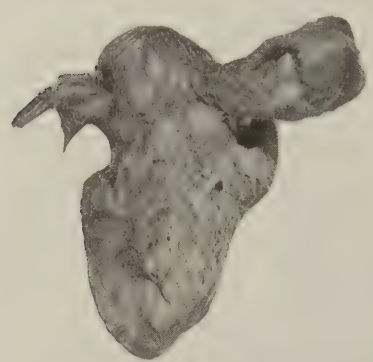
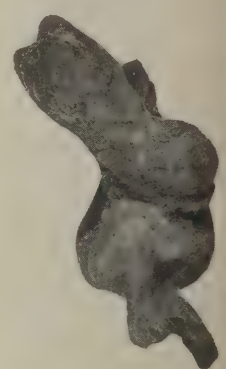


FIG. 6.—Sidebending to right, showing that bilateral asymmetries of two lateral halves of grey and white matter and shape of vertebral column are caused by sidebending.



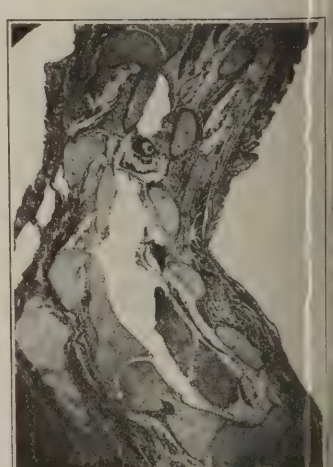
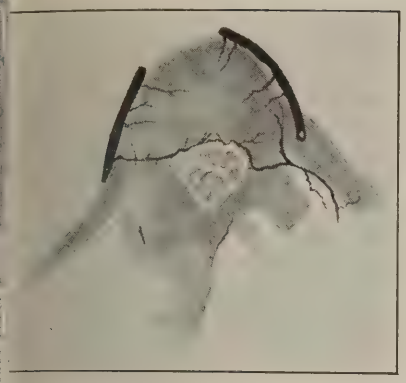


FIG. 9.—Left sidebending, showing that side bending of the body malforms or deforms all parts.

[1]Whether the host or whether the parasite evolves is a question of adaptation or maladaptation of one to the other; for "adaptation is the true cause of every modification" (Haeckel, *History of Creation*, pp. 92, 111, 117, 171; *Evolution of Man*, pp. 158.) "All evil resulting from the nonadaptation of constitution to conditions" (Chapman, *Evolution of Life*, pp. 180), citing Herbert Spencer. Maladaptation is the only disease.



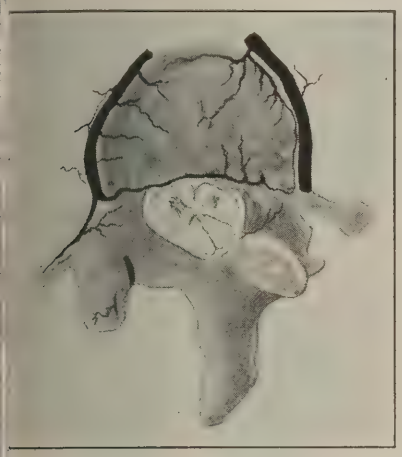


FIG. 11.—Illustration modified by Mr. Erwin Faber from Professor Max Hoffman's *Arteries of the normal and scoliotic vertebral column* to indicate the change in shape and structure of the spinal cord which must ensue from the change in shape of the spinal canal and especially from the decreased amount of nourishment on the one side, and the increased amount of nourishment on the corresponding lateral half which must accompany the evident change in the calibre of the two lateral arteries and their branches depicted.

acid, probably inhibit the inhibitory centres and pathways and the rolling becomes uncontrollable. Brisk flying in the air tumblers and air rollers, stirs the nerves to the spinal cord and excites them and reflexly the muscles of the back are thrown into spasm and the pigeon back somersaults. In the parlor tumbler the least flight stirs up the tumbling impulse.

Fig. 7 shows particularly well the obliquity of a thoracic vertebra: also the oblique malformation of the spinal cord. The anterior grey horn of the spinal cord of the right side is longer than that of the left, while the left posterior horn is the longer. Also, the outline of the cord is malformed and moulded to the shape of the vertebral body and the spinal or vertebral canal. As the right erector spinae group of muscles is atrophic, the muscle bundles have been almost entirely replaced by fatty or fibrous tissue; but the lung on the left side is congested. Therefore disease may be found in either or both lateral halves of a malformed segment. In one instance the sensory mechanism of vasomotor control, or nerve vascular phenomena, being affected, on the other side the motor mechanism being at fault. This corresponds in a way to the diverse mechanisms, inhibition of brain control, or governing sensory mechanisms: and excitation of motor impulse bringing about this spasm of the erector spinæ group.

In chick embryos, between the forty-eighth and fifty-fifth hours, the embryo quits the right position which it has had up to this time; it bends itself and inclines constantly to the left side. It is this inversion of position which affects the inversion of the vessels. For, in the plan above the umbilicus, the veins are anterior and the arteries are posterior; in the plan below (the umbilicus), the arteries are in advance and the veins behind. So far as known, this law holds good for all vertebrates including man.

A Plymouth Rock cockerel chick which had developed "sourcrop," became "cropbound" at three weeks from birth from the shell, and was killed in his fifth week. The transection showed marked deformity of the spinal cord, its outline corresponding to the malformation of the vertebral body, with frank bilateral asymmetry of the grey substance, at the site of a vertebral deformity, a minor curve of the spine.

It is true that asymmetry is seen in most of the viscera of vertebrates generally, and even in some of the head bones, especially about the nose of the toothed cetaceans (whalelike mammals), but the asymmetry is entirely concealed or not conspicuous externally (34).

EMBRYOLOGY OF MALFORMATIONS OF BODY SEGMENTS INCLUDING VERTEBRÆ, SPINAL CORD, NERVES, VESSELS, MUSCLES, VISCERA, LYMPHATICS, AND SYMPATHETICS

Under the heading of comparative anatomy and comparative embryology were described the malformations of the snail by Conklin; of the lancelet by Kellicott; the flat fishes Kingsley; the chick by Serres; the squab; the whalelike mammals (Cetacea) by Kingsley. Swedenborg's views on the importance of spirals were mentioned. In man, the embryo entire designs a double spiral, cephalic and caudal, with the dorsal arc as a union—the close approximation of this double spire has increased the deviation of the head and tail to left and right. When the general movement is parabolic the dorsal curve, exhibited only at this moment, is elliptical. When the movement of the embryo is spiral, the cephalic curve, then the dorsal curve, becomes spiral also. To give these curves absolute numerical values, would be to destroy all truth by suppressing all possibility of individual variation among embryos (35). The embryo tectonic curves become thus a criterion of the normal or abnormal character of this or that particular embryo (36). Falk describes many instances of embryonic malformations accompanied by axial deviations (37). Ballantyne, writing independently, does likewise. Moreover, he says of morbid agents not peculiar to the embryo, in the embryo we call them teratogenic, in the fetus and adult they are called pathogenic, but there is no sufficient reason for believing that they differ one whit. For Féré's researches showed that experimental teratogeny fell in line with experimental pathology (by the use of toxins of bacteria and poisons). Probably the causes of disease are just the causes of these malformations (38). As embryo tectonic curves become a

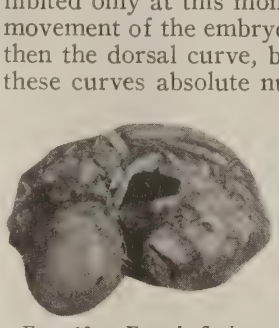


FIG. 10a.—Forced flexion. Extreme flexion of squab's neck.

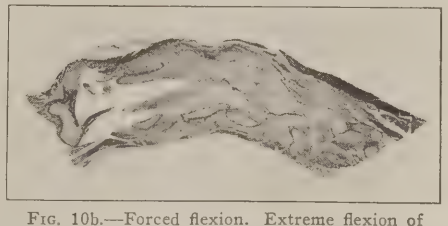


FIG. 10b.—Forced flexion. Extreme flexion of a squab's neck. The resulting deformity of the spinal cord is due to limitation of movement of the surrounding vertebral column fixed in a flexed position.

criterion of the normal or abnormal character of the embryo; so curves, i. e., malformations of body segments become a criterion of the normal or abnormal character of the adult. For the phenomenon of curves (scoliosis) should be considered universal (39). The phenomenon of variation is universal (40). As the axis cannot become monstrous without in some way affecting the organs which are subsequently produced from it; so axial anomalies are nearly always accompanied by some deviation of structure in the appended parts (41).

CURVATURES AND MALFORMATIONS OF THE SPINAL CORD ACCOMPANYING CURVATURES AND MALFORMATIONS OF THE SPINE

In a scoliotic vertebra what is gained on the right side is lost in size on the side opposite (42). The arteries on the concave side are directed backward, they are wider on the concave side;—that such occurrences cannot be without influence on the nourishment of all parts, is selfevident (43). Figs. 2 and 3, modified from Hofman (44), illustrate the vascular changes accompanying a scoliotic vertebra. The difficulty of flow of the venous blood is gravely disturbed (45). On this anatomical behavior, results an asymmetry of the vertebral body, caused by the increased growth favoring the convex side of the vertebral half. On this present growth is explained, moreover, the asymmetry of the vertebral arches and their adnexa (46). The spinal cord (in scoliosis), does not lie in the middle but with its dura is bent to the right arch, which corresponds to the concave side (47).

FIG. 12.—Photographs of his embryo models reproduced through the courtesy of Professor MacCallum of the Wistar Institute and of the department of anatomy in the University of Pennsylvania Medical School.

The illustrations (modified from Bachman) show a bilateral asymmetry of the grey and white substance of the spinal cord in scoliotics. In describing an anomaly of the spinal cord in an embryo, Fischel says, of the spinal cord and canalis centralis: "Because of the winding curvature of this region of the body, the last mentioned space" (central canal and spinal cord) "appears to be cut tangentially." "The embryo possessed a slight bending" (curve), "because the illustrations show asymmetry" (48). Therefore as scoliosis is universal and as variations are universal and bilateral asymmetry is universal (49); and as we are able to trace the mutability of individuals to the mechanical conditions of nutrition; and because the spiral type owes its peculiarities entirely to mechanical conditions; and as this form derives the power of infinite variation (50) and as axial anomalies are nearly always accompanied by some deviation of structure in the dependent parts (51): It might be assumed that many, if not most, variations were accompanied by some deviation of the spine. "Without one being dependent on the other, but both depending on a similar cause" (52). In other words perhaps nearly all these phenomena are dependent on embryo tectonic, or even postnatal mesial or lateral curves of body segments.

Therefore change in shape of body segments includes change in shape of all structures composing the altered or malformed segments, including spinal cord, nerves, bloodvessels, vertebral column, ribs, and all structures and organs found in transverse sections of embryos and adults alike. Not only are these factors correlated and interdependent, but all are affected by exaggerated body-movements, or by limitations of these movements, arresting the body when bent forward, backward or to either side. And the illustrations show these malformations and are subject to experiment (53). Further many diseases in adults accompany severe scoliosis, according to Hofman, Bachman, Caprioli and Codivilla; and malformations in embryos accompany curves according to Falk, Ballantyne and also Boujard. By inscribing a smaller circle within a larger one it may be seen that the smaller circle or curve is relatively more crooked than the larger. Therefore small curves show relatively at least as much deformity among fewer segments; in the large curves a greater number of segments but less relative deformity of each segment. The ribs splinting the deformity make the deformity of minor curves less obvious.

Heidin describes a case of heterotopia of the spinal cord and says: an idea is given us of the frequency and diverse forms of heterotopia. He cites other cases with histories from Krönthal; Fürstner and Zachner; Bucholtz's case showed bilateral asymmetry; Bucholtz again; Kohler and Lick; Pick reported three or four cases; Köppen one of heterotopia spinalis; Heidin further says: "It is well to consider therewith that many of the bearers of such spinal cords die a sacrifice to disease of other organs, e. g., bronchitis or pneumonia (54). Marburg describes a case of amyotrophic lateral sclerosis secondary to heterotopia; he says, "perhaps we see here the congenital disposition in Strumpell's and Marie's sense; and that R. Stern has found a form of transection of the cord occurs which demands the earliest childhood (55).

(To be concluded.)

Practical Therapeutics

TREATMENT OF CERTAIN CONDITIONS COMMON TO MOST CHRONIC DISEASES

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The topic submitted is one chief feature of deteriorative diseases of middle life, i. e., regulation of the acid alkali balance of the blood.

It has long seemed to me, and so presented in teaching, that so soon as clinicians habitually take under consideration certain common denominators, expotentials, integers of chronicities—from whatsoever causation—we shall make better headway and achieve greater uniformity in results. Thus the clinical background becomes simplified; we get a clearer idea of the materials with which we are working and learn how to cover more ground in our efforts.

Recent personal experiences directed my attention to what appear good possibilities for limiting the progress of deteriorative diseases of middle life and for overcoming many of their heretofore obdurate effects. The means suggested begin with dietetic modifications designed to lessen tendencies toward acid alkali imbalances in the blood.

To this disturbance has been traced much of cellular and structural deterioration, which again leads toward the terminal phenomena or the real causes for much decrepitude and untimely death.

While these recommendations are in part therapeutically practicable they are also submitted in the hope that, through wider cooperation, more safe and sure conclusions as to procedure shall be reached.

Postulates: When for any reason the automatic selfregulative and defensive mechanisms begin to be overborne, get out of gear, refuse to work, it becomes desirable to set them right *cito, tuto et iucunde,* also from as far up the line of causation as is possible and in the most radical particulars.

We must begin where nature has left off, where the despotic impacts, pressures or repressions of artificial complexities of life start to confuse function. Thus the factors of safety are unduly invalidated.

One promising direction for effort is through readapting certain habits of life, in particular of diet, hence of metabolism. We must here proceed with caution being careful not to urge correction or revolution of man's most cherished habits, customs, prejudices; otherwise we plunge into the impasse, or barrier, raised by social sanctions and folkways; also the verging currents of fashion in artificialities of taste, discriminations, especially cravings for what comes to be desired but is in no sense needful.

The wisest course, it would seem, is to deal with some of the fully formed and accepted appetites and commendable foods, "play them up," and apply such modifications to these and their congeners as shall constitute a valuable new departure.

My proposition or query is: Why not make larger, more massive, systematic use of citrous fruits? In oranges, pamelos (socalled grape fruit), tangerines, tangelos (a delightful cross of tangerines and pamelos), also lemons, limes, etc., there resides the largest amount of alkaline basis (ash, etc.) whereby the blood is furnished with, and is sustained in, its proportionate alkalinity.

These are now of widely recognized value in small amounts; are regarded as excellently healthy *luxuries.* There is ample ground for regarding them as *necessities,* not only in health, but especially where the blood tends to lose its alkali reserve. Socalled acidosis lies at the base of a large variety of acute, as well as deteriorative diseases. This, in the middle-aged and sedentary, is a constant menace. It can also be prevented by supplying *adequate amounts* of suitable corrective elements.

Already orange juice has become standardized for certain infantile and childish diseases, as preventives of acidosis; so fatal in the young. Also in marasmatic, scorbutic and rachitic conditions. Now lemon juice is recommended, added to milk for infants and coming to the front.[1]

Certain erroneous notions still persist, among the profession as well as the public, to the effect that acid fruits act harmfully in conditions where the blood is supposed to be acid, especially for those who enjoy the distinction of being told they are "gouty," "rheumatic," or of "a peculiarly sensitive constitution." These are echoes of long abandoned professional opinions which arose before the real facts were so generally known. I have in common with many others, urged such phobiacs to eat freely of ripe fruits and always to their radical advantage. Incidentally where there occurs some local or temporary digestive disturbance it can readily be corrected. To the juice of lemons or oranges a little added potassium bicarbonate will do. The literature is full of isolated facts along this line which it is my purpose to coordinate and integrate when greater space is at my disposal.

At the annual meeting of the American Clinical and Climatological Association in May, 1924, I presented these ideas to a score or more of physicians in charge of special sanatoria, which seemed to interest them greatly. As to whether acidosis is a constant feature of chronic tuberculosis they had not as yet adequate data but offered to learn. While in Florida during the past winter, convalescing from a gallbladder operation, I was distressed at the pitiful waste of fruit occurring in overbearing years. Untold millions rot upon the ground. The owners could not afford to gather and ship them.

A number of prominent fruit growers assured me they would gladly ship these fruits by the carload, free of cost—except for expense of picking and transportation—to sanatoria, provided those in charge would undertake to make clinical investigations. They also said that should there be adequate demand they could double or quadruple the output.

PROPOSITION

I would urge that physicians in charge of hospitals, sanatoria, homes, and similar institutions,

[1]See "The Value of Milk Acidified with Lemon Juice," by A. F. Hess and Milton J. Matzner, *J. A. M. A.*, May 17, 1924.

wherever chronic or socalled incurable or decrepit cases are grouped, the basis for whose decrepitude is faulty metabolism, should attack this problem from the angle of acid alkali balance of the blood. Such cases are at an impasse or dead point due in large part to some metabolic obstruction. When this shall have been removed they should be better able to respond to whatsoever other remediation is indicated, and thus be qualified to "carry on."

Is it not fair to assume that this impetus, release, catalytic substance may reside in supplying massive amounts of fruit juices?

The only answer worth while is putting the question to the test of experience on a comprehensive scale. Why not institute special *citrous fruit cures,* as is done in Europe with grape cures, cherry cures and the like.

Could means, any better, or as good, be devised for revolutionizing the intestinal flora? Why not send suitable "cases" to the countries where these fruits are superabundant and try out "cures," say to Florida, Louisiana, along the Gulf of Mexico, or California.

1504 PINE STREET.

PROFUSE HEMATURIA SUCCESSFULLY TREATED BY ORAL ADMINISTRATION OF A COAGULANT PRESCRIBED FOR PATIENT'S USE

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Although all cases of hematuria are not necessarily serious, the condition may be the forerunner of consequences so grave as to justify its recognition with deep concern. The problem of the proper mode of procedure, once the finding has been established, has long been one which has provoked much discussion, and the resultant theories deduced are numerous and varied.

While it is of course realized that the condition is but a symptom which may be due to one of many causes, the essential factor, undoubtedly, is the arrest of the bleeding at the earliest possible moment.

Chronic nephritis, being the most frequent source of urinary bleeding—possibly the most common, according to Young (1), Woodward (2) and others—I believe my experience in the case of a child suffering from this condition to be worthy of record, in establishing a new source of treatment and in throwing much light on the complete arrest of a profuse hematuria.

Although transfusion has been considered one of the most valuable adjuncts in combating conditions of bleeding, its efficacy was but temporary in the case under consideration. A history of the case follows:

CASE.—Boy, aged ten. Family and past history not important, except the patient had influenza in 1918.

March, 1921, the patient was taken ill with hematuria, which persisted for three months. The patient became so anemic that a transfusion was done. Hematuria returned three months later, but was of short duration.

On April 16, 1923, the patient was first seen by me, and he was then suffering from profuse hematuria. Laboratory tests showed a moderately advanced nephritis. Treatment on the first day consisted of one c. c. of fibrogen, oral administration, in ice water, on an empty stomach, three times a day; on the second day, two c. c. of fibrogen, likewise, in ice water, twice a day; on the third day, one c. c. of fibrogen administered subcutaneously, before breakfast.

On the second day, only slight traces of blood were perceptible, while on the third day no trace of blood was present, and the result has been a complete absence of hematuria. On July 5th the patient went in swimming in cold water, and another attack of hematuria followed. He was given two c. c. of fibrogen in ice water every three hours, for two days, and on the third, there was no visible signs of hematuria.

The writer had previously employed fibrogen with marked success, in nosebleed, and in minor surgical work. This instance, however, marks the first test of its efficacy for internal hemorrhage, and as indicated above, results have proved most remarkable.

The fact has now been generally recognized that fibrinogen is one of the strongest coagulants which normally controls the mechanism of hemorrhage in the body. It is present in blood plasma as a soluble protein—blood fibrinogen—which, in the process of coagulation, is transformed into an insoluble form, namely fibrin. There are times, however, when this mechanism of the body, normally so well adapted to the clotting process which controls the loss of blood, fibrinogen is one of the strongest coagulants which control the mechanism of hemorrhage in the body. It is present in blood plasma as a soluble protein—blood fibrinogen—which, in the process of coagulation, is transformed into an insoluble form, namely fibrin. There are times, however, when this mechanism of the body, normally so well adapted to the clotting process which controls the loss of blood, becomes impaired. In such instances, therefore, it seems but logical to supplement the deficient quantity of fibrinogen and thus assist nature in the process of coagulation. Fibrogen is a tissue fibrinogen, a natural coagulant of the tissues isolated in accordance with the theories and technic of Mills.

Numerous tissue extracts have been recommended and put to the test in hemorrhagic conditions, but none so far, in my estimation, have yielded the same results as has this particular product. This is no doubt due to the fact, as pointed out by Mills (4) that this powerful coagulant—fibrogen—is prepared from calves' lung which was found more active than extracts of any other tissue. To quote from this writer: "Tissue extracts were tested as to their thromboplastic activity on the blood both intravascularly and extravascularly. Lung extracts were found far more active than the extracts of any other tissue, kidney coming second, and then heart, brain, spleen, thymus, testes, skin, somewhat in the order named. The remaining tissues were weakly active as compared to lung, some of them showing very slight thromboplastic action."

In a later publication (5) this writer adds: "The addition of further tissue fibrinogen to the escaping blood is advisable, but it should not be added in the

form of crude tissue extracts, because these contain, in addition, albumins which are toxic to the body. It has been shown that tissue fibrinogen has no toxic effect on the body unless clotting of the blood is induced. The albumins, however, possess a histamine like action in every case, and are quite toxic. The use of the purified substance is therefore indicated, especially since its ease of preparation renders it almost as accessible as the crude extracts."

This new product can be administered, with an equal measure of success, either locally, subcutaneously, or orally. When given subcutaneously, there is no danger of clotting of blood in the bloodvessels. The clotting time of the blood is reduced about one hour, when administered in this way. Results, however, are most gratifying when given by mouth when the stomach is empty and has its normal motility. Results are obtained within half an hour or less when given in this way. In fact, it is the only coagulant known to me which can be prescribed for oral administration in a case of hematuria, and which can be taken by the patient as required or prescribed.

The hematuria having thus been controlled and the danger of anemia and, possibly, of more disastrous consequences being eliminated, it then becomes a comparatively simple matter to proceed with general diagnostic measures. It follows then, that the patient's vitality being restored with the arrest of the bleeding, such remedial measures as are considered imperative may then be instituted with every promise of the patient's cooperation.

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Intravenous Injections of Sodium Citrate in Obliterating Thromboarteritis with Gangrene.—J. Troisier and A. Ravina (*Bulletins et mémoires de la Société médicale des hôpitaux de Paris*, May 15, 1924) report an almost typical case of Buerger's disease in a man aged forty-five years in which the need of amputation seemed imminent on account of gangrene of the anterior third of the sole, the first three toes and the tissues on the inner aspect of the os calcis. Stress is laid on the high cholesterol content of the blood serum in this case, viz., 2.4 grams, in spite of the absence of renal or hepatic symptoms, suggesting that there may have been a disturbance of the metabolism of the lipoids with heightened functioning of the adrenals. Three features of Buerger's disease are seldom wanting: Increased blood viscosity, increased number of red cells, and increased blood coagulability. In Vaquez's disease the authors had already noted temporary reduction of the red cells by ingestion of large doses of sodium citrate, which also reduces the coagulability and viscosity of the blood *in vitro*. In the present case the authors adopted W. A. Steel's plan of administering sodium citrate, but used larger and more frequent doses. Twenty-eight injections, nearly all of four grams of the salt, and the first twenty-four given on successive days, were administered. Hot air and ether dressings were also used for the gangrene. The severe pain rapidly subsided, the gangrenous process retroceded until only the tips of the toes remained ulcerated, and the patient was enabled to resume his ordinary mode of life. The authors recommend the daily injection, at the beginning of the arteritis, twenty mils of a sterilized thirty per cent. solution of sodium citrate, containing six grams of the salt. When improvement begins, the dose is to be reduced to four grams, to obviate the slight facial redness and breathlessness which the drug sometimes produces, especially in patients with hemiplegia or other paralyses. Later, the injections may be given only every two or three days, and the drug may be given subcutaneously or even by the mouth. The treatment should be continued until collateral circulation has been established. The citrate injections do not cause pain, even if the fluid passes outside of the vein, and are never followed by necrosis. The vein retains its softness if solutions not exceeding thirty per cent. in concentration are used.

Massive Doses of Digitalis in Auricular Fibrillation Without Heart Failure.—Julius Jensen (*Lancet*, April 12, 1924) reports his results as follows: The heart rate was in most cases affected to some extent on the evening of the day of administration, about twelve hours after the first dose had been given, and the average fall in rate by this time was ten beats a minute. This fall was maintained the next morning, and later on in that day a further fall of ten beats a minute occurred, though no more digitalis had been given. The quality of the pulse was much improved, the volume being larger. In a few cases coupled beats appeared temporarily. This control of rate, however, was not very stable, as counts taken after meals or after slight exertion or excitement nearly always showed that the pulse had risen toward its original rate. Very often, also, there was a relapse lasting for a few hours without any apparent cause. The total duration of the effect was four to fourteen days. No definite diuretic effect was observed in any case. The patients all felt better and said that they had less palpitation. As all signs of failure were absent in the cases observed, there was no opportunity of judging the effects of digitalis on the general condition. Apart from occasional coupling of the pulse in two cases there were never any indications of overdosage. Nausea and vomiting were never seen, showing that the vomiting which sometimes occurs early in administration of digitalis in heart failure depends far more upon the failure of the heart than upon any irritant effect of this drug on the stomach.

Treatment of Anthrax with Intravenous Injections of Neosalvarsan.—O. Grasser (*Wiener klinische Wochenschrift*, March 13, 1924) obtained some excellent results with intravenous injections of neosalvarsan. Light cases were given only a single injection of 0.45 to 0.6 gram neosalvarsan and more severe cases were given two to three injections at intervals of two days. These resulted in an astonishingly rapid diminution of the swelling and a marked improvement in the general condition of the patient.

Historical Medicine

The History of Diabetes*

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The presence of sugar in the urine of certain patients unquestionably was known in the most remote antiquity, but Celsus was the first to describe it from the clinical viewpoint. Galen regarded the process as due to weakness of the kidneys and for centuries this error was accepted until the year 1568, when Trincavella pointed out that the urine was composed of unaltered fluids ingested by the subject, since it possessed the taste of medicinal drinks taken by the patient. Hence diabetes resulted from the intake of sweet drinks containing sugar in excess.

Paracelsus, Sylvius and van Helmont each put forward certain theories regarding the etiology and pathology of this morbid process, but they are so hazy that they need not be considered. In 1754, Richard Mead affirmed that diabetes was an affection quite independent of the kidney, and then Sauvages published his *Nosologia methodica* in 1763, in which he described seven kinds of diabetes which naturally singularly complicated the subject.

In 1775, Dolseux pointed out that diabetic urine had a sourish odor and also showed that the blood serum of diabetics possessed a taste of sugar, thus proving that the sugar in the urine was not formed in the kidney. It is obvious that Dolseux's discovery was an enormous step in the advancement of our knowledge of the pathology of diabetes, and in point of fact it was generally accepted by the profession of the day.

In 1815, Rollo, an English surgeon, supposed that diabetes was a disease of the stomach resulting from corrupted gastric juice. Then, in 1815, Chevruel showed that the sugar contained in diabetic urine was identical with grape sugar, and this had the fortunate result of reducing the number of kinds of diabetes from seven to two, namely, diabetes mellitus and insipidus.

Little more progress was made until 1821, when Tiedemann and Gmelin discovered that sugar formed normally in the digestive tract of animals quite independently from carbohydrates. Bouchardat then suspected that this transformation took place more rapidly in the case of diabetic subjects and showed that the amount of sugar contained in the urine was in direct ratio to the amount of sugar and carbohyfunction of the liver did not exist, but this theory is no longer found to be exact, it nevertheless was fruitful in results.

It was just at this time that Claude Bernard demonstrated that—contrary to what was then the established opinion—certain animal viscera can manufacture sugar just like plants. This glucose forming function belongs particularly to the liver under the control of the bulb, which when pricked with a needle will immediately result in glycosuria. This well established experiment was unsuccessfully attacked by L. Figuier. Next, by his famous experiment of the washed liver, Bernard showed that the hepatic gland manufactures glucose postmortem (quite independently of the blood) from a carbohydrate contained in the hepatic parenchyma and which he later on called glycogen. Contrary to Bernard's teachings that glycogen did not exist as such in the liver, Rouget was able to extract it from various other animal tissues.

In 1859, the distinguished English physician, Pavy, who had been a pupil of Claude Bernard, thought that from his animal experiments the glycogenic functions of the liver did not exist, but this theory found little support from other investigators.

As has already been said, Claude Bernard discovered that a prick inflicted to the bulb produced glycosuria and that division of the splanchnic nerves prevented this injury to the bulb from giving rise to glucose in the urine. Shortly after this, the great physiologist produced glycosuria after the exhibition of curare and formulated the following principle, namely, that an animal becomes diabetic if its functions of relation are suppressed, the functions of nutrition remaining intact.

To sum up, it may be said that Claude Bernard's experiments prove that the animal organism when submitted to a meat diet manufactures sugar and that sugar is principally produced in the liver. Hence he concluded that the liver was the seat of diabetes. However, the Leipzig school doubted the reality of hepatic glycosuria, and others as well. Pfluger did not admit that the functioning of a given organ could be deducted from the analysis of the venous and arterial blood. Seegen found more sugar in the blood of the suprahepatic vein than in the portal vein, but this fact he attributed to transformation of albuminoid matter, because he supposed that the amount of glycogen and sugar contained in the liver did not vary, a fact that has not been confirmed. Continuing his experiments he at length was led to discover a glycosuria which developed only after the ingestion of carbohydrates, due to insufficiency of the hepatic cell, and yet another form of glycosuria arising without the ingestion of carbohydrates and depending upon the fact that numerous elements of the animal organism had lost their faculty of destroying sugar. But in none of these cases was the elimination of sugar exaggerated.

Starting from the inexact fact that the sugar in the blood of a diabetic is without action on polarized light, Cantani put forward the idea that it was an isomer of glucose, less easily destroyed by the organism than glucose and whose production was the result of a change in the pancreatic cells.

Bouchard attributed diabetes to faulty sugar metabolism while others regarded it as a hyperpro-

*Summary of a lecture delivered during the course on medical history at the Faculty of Medicine of the University of Geneva.

luction of sugar, some organic perturbations existing esulting in the formation of sugar instead of fat.

The well known work by Frerichs, published in 884, is purely clinical, although he erroneously tates that absorption of sugar or fat has no in- uence upon the content of the urine. In 1889, Hoffmeister studied the assimilation of various ugars in dogs and found that for each subject and ach kind of sugar there was a limit of assimilation eyond which the surplus of sugar absorbed, was liminated in the urine.

At this point, we will retrace our steps to the ear 1788, when Thomas Cawley published the first ase of diabetes mellitus accompanied by lesions of he pancreas (*London Medical Journal,* vol. 9, 788). The process was developed in about six nonths and autopsy revealed a pancreas stuffed with alculi, while the right end of the gland was hard nd waxy. In 1833, Richard Bright published a aper in the *Medico-Chirurgical Transactions* in hich he calls attention to the presence of fat in the eces—a symptom to which little importance had een attributed up to that time—and among the sev- ral cases recorded was one of diabetes. In 1846, Bouchardat pointed out that morbid changes in the ancreas play a part in the production of glycosuria nd again repeated Haller's experiments of extirpa- ion of the pancreas although his results were incon- lusive.

In 1852, Traube studied the digestion of fats in iabetes and with the methods at his disposal at the ime, made dosages of the fecal fats. The results were uncertain because the patient under observation ngested so large a quantity of fats that they would aturally give rise to residual fat in the feces.

In 1854, Jeffrey Marston, of Newcastle, published he report of a case of diabetes gravis with fatty tools, in the *Glasgow Medical Journal,* and from his time on more cases were reported. Claude Ber- ard noted a small atrophic pancreas in a diabetic hile Frerichs, in 1862, reported nine instances of iabetes with pancreatic lesions, there being atrophy nd fatty degeneration of the gland in five.

In 1864, von Recklinghausen found a pancreas at utopsy of a twenty-six year old diabetic, similar to hat recorded seventy-six years previously by Caw- y, and Jaccoud mentioned pancreatic atrophy as mong the lesions of diabetes, while a number of ther observers, too long to mention, reported in- tances of gross lesions of the pancreas in autopsies f diabetic subjects. However, we must come to the ear 1878, when Lancereaux finally enunciated the elationship existing between lesions of the pancreas nd the production of glycosuria and built up his heory of pancreatic diabetes. Then enthusiasm pread and many observers maintained that most ases of diabetes mellitus were due to pancreatic sions. This enthusiasm was combatted by Lan- ereaux, who maintained that there was only a type f diabetes dependent upon pancreatic changes and t the Congress of Medicine held at Lyons in 1894, his distinguished pathologist and clinician admitted n a general way the identity of pancreatic diabetes nd diabetes with emaciation. Further observations n this respect were recorded by Silver and Irving, Rhüle, Israël, Guelliot, Notta, Laplick, Ferraro and thers but experimental proof of Lancereaux's theory was wanting. Therefore, great was the joy, when in 1889 von Mering and Minkowski were suc- cessful in producing glycosuria, marked emaciation and death in animals following complete removal of the pancreas, and fortified the opinion of the part played by this gland in the production of diabetes. Study of the subject continued and investigators modified their technics. Instead of complete extir- pation of the gland at once, the organ was removed successively in three portions. Hédon, Gley and Thiroloix produced progressive atrophy of the pan- creas by various substances injected through Wir- sung's duct and the atrophy gave rise in dogs to glycosuria. In 1895 Sandmeyer produced a special form of diabetes by removing seven eighths of the gland; the disease progressed slowly, the glycosuria did not subside when the animal fasted and was in- creased by ingestion of carbohydrates. This form was also reproduced by Hédon.

Up to this time Claude Bernard, Schiff, Bérard and Colin, Klebs and Munk, Senn, Martinotti, de Dominicis had only obtained very variable results experimentally. The results obtained by partial or total extirpation of the pancreas by Gley, Hédon, Lépine and Thiroloix, with or without subcutaneous graft of a bit of the gland, differed totally. In com- plete removal an intense diabetes ensued; partial extirpation was followed by a mild diabetes which gradually became severe, while in some instances no glycosuria occurred at all. Lastly, in depancreatized dogs, but who had been grafted with the gland, dia- betes only arose when the graft was removed.

Certain investigators supposed that the causal fac- tor of diabetes was a lesion of the pancreatic acini. In 1891, Lemoine and Lannois described an intra and interacinous sclerosis which they believed to be the most important lesions in the genesis of diabetes, while Hausemann, Lépine, Karakascheff and Herx- heimer considered the lesion of the parenchyma as exclusively diabetogenous, because they found the islands of Langerhans normal in autopsies on diabetics. Following the initial experiments of La- guesse in 1893, who attributed to these islands an important part to the internal secretion and its glyco- regulating action, Szobolew, Herzog, Dieckoff, Thoinot and Delamare and others regarded insular secretion as the anatomical cause of diabetes. Opie described the lesions of the islands, viz., interlobular and intralobular and periacinous cirrhoses and hyalin degeneration, while Weichselbaum, in 1910, mentions hytropic degeneration and a decrease in the number of islands, ending in atrophy of the pancreas. In 1915, Arrigo Visentini ligated and resected the excre- tory pancreatic ducts in dogs, this giving rise to total atrophy and sclerosis of the gland, alone the epithe- lial elements remaining, to which Visentini at- tributed the signification of the islands. The animals did not develop glycosuria, but this did arise when extirpation of the remaining atrophied pancreas was done. From this Visentini concluded that the origin of the glycoregulating disturbances was in the islands and maintained that histologically the islands of Langerhans are quite independent of the tissues surrounding them.

As far back as 1905, Gellé showed that the islands are rare and offer important lesions in diabetes and pointed out that there were insular acinous transi-

tional types of the disease which are retrogressional forms. Thus diabetes is characterized by a tendency of the islands to transform into acini, hence rarefaction of the islands with their functional decrease. Curtis, of Lille, also maintained that a lesion of the acinous tissue exists which hinders the acinous insular transformation, hence the rarity of transitional forms developing from the acinous to the island.

Many observers are, however, less affirmative than Gellé who in 1913 stated that he had never met with an autopsy of a diabetic in which very advanced lesions of the pancreas did not exist. Hausemann, Szobolew, Schmidt, Kasahara and many others have reported instances of normal pancreas in autopsies on diabetics, while Russel and Cecil have shown that the number of islands may alone be decreased without any other evident lesion being present.

For some time past pancreatic diabetes has been looked upon—especially by the German school—as a peculiar form of this affection characterized by functional disturbances of the exocrine and endocrine secretions of the pancreas and Naunyn and Umber, especially, have described the symptomatology and the signs of insufficiency of the external secretion, while the American school, headed by Joslin, Banting and Macleod, have largely contributed to this subject.

Aristotle as a Biologist

Dr. Charles Singer, of London, writing recently on Aristotle, points out that the history of the scientific writings of Aristotle is a series of reversals of verdicts. His genius for system caused his works to replace all that went before and the Aristotelean view of the universe ruled in later antiquity. As antiquity passed into the Dark Ages the West lost all his works save those on logic. In the thirteenth century his scientific writings were rediscovered. They were forbidden, but after a contest were accepted once more. "Scholasticism" was built on them and Aristotle ruled more absolutely in Christian Europe than ever in pagan Greece and Rome.

With the advent of the scientific renaissance, an event later than the artistic or literary renaissance, the reputation of Aristotle again fell. His conception of a limited universe with the earth in the centre and the planets moving around it was attacked by Copernicus and later by Galileo. The battle raged back and forth; its outcome was the utter rout of the Aristotelean. One after another the doctrines of Aristotelean physics were undermined. A notable incident was the demonstration by Galileo that the rate of movement of falling bodies is a function not of their weight but of the period of their fall. The matter was put to a dramatic test by dropping two unequal weights from the top of the leaning tower of Pisa. The philosophy of Aristotle, or rather a medieval interpretation of it, continued to be taught, but among men of science he was now discredited. The midnineteenth century brought the last reversal of verdict. Beginning with Johannes Müller, scientific men turned from the physical to the biological works of Aristotle. A series of striking verifications of his biological investigations succeeded one another. With the advent of evolutionary ideas interest was further awakened. From the problems of generation and development biologists found his scientific works a mine of suggestion. The very problems that most concerned them were here set forth with an acumen and mastery of statement never excelled. His reputation as a biologist has since progressively risen and it may be safely stated that Aristotle now takes his place among the very greatest investigators of all time. What, asks Dr. Singer, is the cause of this series of changes? The answer is not far to seek. Aristotle, who possessed the most supremely equipped intellect of any mortal, attempted more than mortal could accomplish. He sought to set forth a complete scheme of the universe. In doing this he relied upon others for his physics and astronomy. In biology, however, he observed with his own eyes. Though no physicist he was a naturalist to his finger tips. What then were his actual achievements as naturalist? Observations and inferences. We find him investigating some five hundred species of animals, and recording innumerable observations. We may mention his wonderful acuteness in perceiving that, in a single species of Mediterranean dogfish, the process of development resembles that of the higher warmblooded animals in that the young is linked to the mother's body by a placenta. The verification of this amazing statement immediately drew the attention of men of science. No less remarkable is his account of the life of bees, of the generative process of the octopus, of the feeding habits of the torpedo fish, of the way the socalled frogfish secures its prey, of the four chambered stomach of ruminants, and of the habits of the male of a species of catfish in guarding its young. The series might be multified indefinitely. As for theory he laid the basis for classification by his idea of a "Ladder of Nature." The conception of species comes from him: the very word is a Latin translation of one that he uses. From his writings may be drawn up a classification adopted by naturalists.

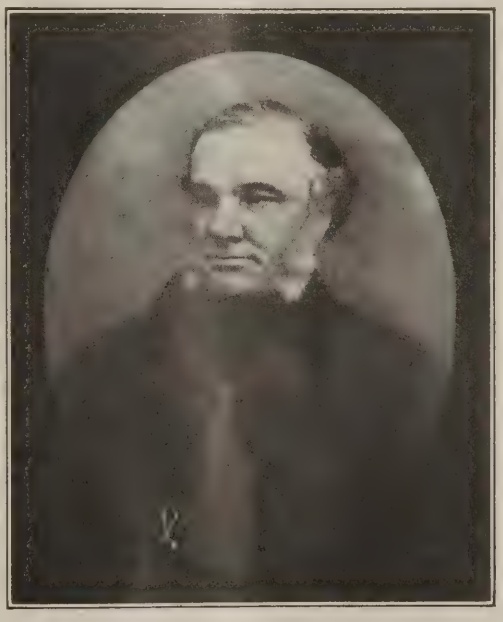
Most masterly is his treatment of questions of heredity and generation. The philosophical naturalist must therefore always return to Aristotle for refreshment and inspiration. One feels that had he been able to devote more time to purely biological work he would have formulated a doctrine of organic evolution; he was evidently moving in that direction. Even as it is, he sets forth a doctrine of heredity almost identical with that formulated by his legitimate successor, Charles Darwin. In 1882 that great naturalist wrote of his mighty predecessor: "From quotations I had a high opinion of Aristotle's merits, but I had not the most remote notion of what a wonderful man he was. Linnaeus and Cuvier have been my two gods, though in very different ways but they were mere schoolboys to old Aristotle."

Contributors to the Science of Medicine

Thomas Addison

The name of Thomas Addison is one of the great names in medicine and, perhaps, on the whole, the greatest of those which have gained fame for themselves and Guy's Hospital. Astley Cooper shone as a surgeon, William Gull as a physician but Richard Bright and Thomas Addison were original thinkers and workers and made notable additions to the sum of medical knowledge. It is true that Bright effected one of the greatest revolutions, if not the greatest revolution, since the time of Harvey in our habits of thought and methods of investigating morbid phenomena and tracing the etiology of disease. But Addison in his particular line of research was quite as original and moreover, he was gifted with a remarkable faculty for imparting knowledge. He was a great teacher, as well as a great thinker and worker.

The three shining lights of Guy's Hospital shone at the same time, for although Cooper was born some twenty years earlier than Bright or Addison and died some twenty years before these two their careers at Guy's overlapped for a time. Thomas Addison was born in 1793 near Newcastle in the north of England where he received the chief part of his education. He was well grounded in what were known as the humanities and gained a masterly knowledge of Latin. He then went to Edinburgh to pursue his medical studies. In 1815 he took his degree in medicine and came to London to practise. He was first appointed house surgeon to the Lock Hospital and then studied skin diseases, and was probably the first physician in London to give occasional clinical lectures on diseases of the skin. It was not until 1820 that he went to study at Guy's Hospital and was appointed physician there in 1824. In 1827 Addison was appointed lecturer on materia medica. In 1829 he and John Morgan, surgeon to Guy's, published an essay on The Operation of Poisonous Agents on the Living Body. This was the first serious investigation in England into the phenomena of general poisoning.



THOMAS ADDISON

In 1837 Addison was appointed full physician. At the same time he was appointed joint lecturer with Dr. Bright on medicine. They agreed to write a book on the *Elements of the Practice of Medicine* of which the first volume only appeared and this was written by Addison. He wrote valuable monographs especially on diseases of the lungs in which he took particular interest. In his essays on the Anatomy of the Lung and Pneumonia, he demonstrated the mode of termination of the bronchial tubes in the air cells, and how these were packed closely together; it being a mistake therefore to regard pneumonia as an inflammation of an imaginary parenchyma lying amongst them. He showed that the real seat of the inflammatory process was the air cells themselves. As regards the chronic destructive diseases of the lungs in phthisis, Addison was the great instigator and supporter of the view that the disorganizing changes were due to inflammatory processes, whether tubercle was present or not, and that these changes were not due to the softening of tubercle, according to Laennec and his school. Addison also contributed valuable papers on the diagnosis of chest diseases. However, the achievement of Addison which dwarfs all his other achievements and which will ever immortalize his name was the discovery of a disease of the suprarenal capsules which slowly proves fatal by exhaustion accompanied by a general discoloration of the skin.

This discovery has been often spoken of either as a kind of guess or due to some peculiar inspiration with which Addison was endowed; but so far from either of these suggestions being true, his memoir on the subject was the result of years of painstaking observation. Addison had not so exact an idea of the very special nature of the disease as we now have, as he associated it with "idiopathic anemia" and he believed that any disease which involved the structure of the organs might be productive of the symptoms he himself styled the disease *metasma suprarenale;* the term bronzed skin also came into use, and the term cutis acnea may be found in Oliver Wendell Holmes' *Poet at the Breakfast Table.* Addison's discovery was by no means universally accepted. Large treatises in Germany and France were written in disproof of its existence although Trousseau gave it the name of Addison's Disease. In Edinburgh, Addison's Alma Mater, Hughes Bennet and other professors would not acknowledge it but endeavored to explain it away.

Addison's fame in future years will rest upon this discovery and upon his writing, but during his lifetime they added little to the reputation which he then enjoyed. This, which was very great, was owing entirely to the personal influence he exerted over his pupils and those who came into contact with him.

His original work on chest disease did not appeal to students, and his memoir on suprarenal disease did

not appear until near the close of his career. The secret of his position was the personal power he possessed, greatly superior to that which Bright could ever claim, and equal, if not greater than, that of Sir Astley Cooper. For many years he was the leading light of Guy's so that every Guy's man during the thirty or forty years during which he taught was a disciple of Addison, holding his name in the greatest reverence, and regarding his authority as the best guide in the practice of the medical profession. Addison was not learned in the history of medicine; whatever he said was his own, and his sayings were eminently practical. He was dogmatic in his sayings and thus students accepted as pure gospel every word which flowed from his lips.

The force of his words was enhanced by his mode of delivery and by the presence of the man himself. Addison was of good height and well made, stood erect, with coat buttoned up very high, over which hung his guard and eyeglass. He wore a black stock with scarcely visible shirt collar, and this further elevated his head. He had a well proportioned good head, with dark hair and side whiskers, large bushy eyebrows and smallish dark eyes, nose thick as were also the lips which enclosed his firmly knit mouth. His features were not refined, but belonged to a powerful mind, and showed no trace of any kind of sentiment. His penetrating glance seemed to look through one, and his whole demeanor was that of a leader of men, enhanced by his somewhat martial attitude. He was feared rather than loved by the students while at the same time he was most implicitly believed in.

It was difficult to conceive a better teacher. His lectures were of a very high order, extempore, couched in good language which amounted occasionally to true eloquence. His clinical lectures were especially excellent, as he never failed to thoroughly unfold the case which he was discussing, and so, arguing both from positive and negative reasons, he placed the diagnosis on a sure foundation. His examination of the patient was of a most complete character. He never reasoned from a half discovered fact but would remain at the bedside with a dogged determination to track the disease to its very source irrespective of the time it might take to do so. He was surpassingly skilful in auscultation of the heart and lungs.

Perhaps, as a clinical investigator Addison has never been equalled and to those who knew him best his power of searching into the complex framework of the body and dragging the hidden malady to light appeared unrivalled. However, in one respect he found little favor with the medical men of his day and committed an unpardonable fault in the eyes of the patients. If he did not see his way to the use of a drug he would not give it. He was called in on one occasion to an obscure case of abdominal disease. Addison spent a long time in unraveling it, and finally pronounced it to be cancerous disease of the peritoneum. He discussed it with the patient's medical attendant, saw the friends, and was departing when he was called back and reminded that he had not written a prescription. Addison asked the medical man what he was giving, and he said magnesia mixture; to which Addison replied, "a very good medicine; go on with it." In the spring of 1860 Addison was compelled to retire from his hospital duties by a threatening of brain disease and went to Brighton for the benefit of his health. There he died, June 29, 1860, aged sixty-seven. A marble tablet in the chapel of Guy's Hospital records his merits, and one of the wards of the hospital is named Addison Ward.

Addison was decidedly one of the great men of medicine. He was an original thinker and worker but at the same time was eminently practical. His clinical observation was remarkably acute and as a diagnostician he has had few superiors. These gifts combined with ready speech approaching eloquence made of him a model teacher and he helped to raise the standard of the medical school of Guy's to an appreciable extent.

The Story of a Great Consultation: Jerome Cardan Goes to Edinburgh.—Dr. Charles L. Dana (*Annals of Medical History,* June, 1921) considers Cardan as typical of his time—"an accessible mirror of the medicine, learning and life of the university world of the sixteenth century." He tells the story of the learned physician's journeyings from Pavia, where he had just resigned the professorship of medicine at the university, to Edinburgh in response to an urgent call from the personal physician of the Archbishop of St. Andrews to treat the latter who was suffering from a very severe and prolonged asthmatic condition, due to "a cold moist brain." No abstract can do justice to the clever, humorous and interesting manner in which Dr. Dana treats his subject. The article, from beginning to end, is delightfully written.

Cardan, with five attendants, began his journey on February 23, 1552, and reached Edinburgh on June 29th. His route was over the Simplon Pass to Lyons, thence to Paris, then called Lutetia, where he met in consultation the famous Jacobus Sylvius and John Fernel, who discussed the troubles of the Archbishop, Cardan wisely keeping silent and venturing no opinion. The thing that seems to have impressed him most in Paris was a unicorn horn shown him by the physician to the king in one of the churches. At about this time he had drawn up a contract with the Archbishop, but it was then destroyed as being unnecessary between a physician and an honorable patient. That this was a perfectly safe procedure in those days is shown by the fact that, at the end of his course of treatment, Cardan was given a much larger sum than the original arrangement called for, and many valuable presents besides.

He found Paris very dirty as to streets, smelly, and with a dense population. He arrived in London in June, and found England "immensely cold . . . the grass full of worms, and the sky darkened with crows." He stayed only a few days and left for Edinburgh, where he remained until September 12th. "I doubt if he had a very good time," writes Dr. Dana. "Cardan's chief amusements at home were gambling, music and fishing, being most expert in the first. . . . He wrote a very good book advising against it but instructing in the practice. Cardan did not like politics or theology, or massive attacks on food and drink, which were the standard diversions of the time." . . . He did not begin his

treatment of the Archbishop for forty days after his arrival, prudently allowing the personal physician to carry out the treatment prescribed in Paris by Sylvius and Fernel. The Archbishop grew worse, Cardan explained, and he was commanded to go ahead with his own method.

Cardan believed that the great man's brain, instead of being cold and damp, was hot and dry, causing humors distilled in the stomach to rise into the brain, and that his food was turned into phlegm, which passed into the bronchial tubes, causing cough, expectoration and dyspnea. "As a matter of fact," says Dr. Dana, "the bishop was a great eater and drinker, and took no exercise; he worked hard, kept irregular hours, and was not shy with the ladies. Practically, Cardan put him on a Weir Mitchell rest cure. . . . He rose at 8 o'clock and took, one day in eight, a shower bath—the first ever taken in Scotland. Then he took a quiet walk in a shady place, chewing a little mastic, the sixteenth century substitute for pepsin gum. This caused expectoration and purged the brain. At 9 o'clock he had breakfast, consisting of liver with a little ginger, and some bread, with two ounces of white wine. After this he could have a little chicken and a little more wine. After breakfast he rested and amused himself. From 12 to 4 he was allowed to attend to his business, but was forbidden to write letters with his own hand. At 4 he went out for an hour's ride on horseback. He then, sitting or reclining, was allowed to give audience to those who wished to see him. He had supper at 7 o'clock which was like his breakfast, but opened with a sixteenth century cocktail consisting of a teaspoonful of pure honey. He was to go to bed at half past eight and secure ten hours of continued sleep. As specialties in the diet, he was recommended turtle soup, snails, barley water, and chicken broth." A few suggestions as to the Archbishop's social hygiene were added. About the only medication the patient received was a blistering of the coronal suture, and a mixture of milk and water with two grains of elaterium poured through the nose, this being done on an empty stomach. The bishop was forbidden to sleep on a feather bed, made to use a linen pillow, told to comb his head every morning with an ivory comb, and to give his extremities a vigorous rubbing. He was also advised to purchase a clock. He was given as a laxative preserved peaches and sugar of violets, had to drink a quart of milk a day, and to take as a fattening agent two ounces of sugar water dissolved in the broth of a young pig. "All this, it seems to me today," writes Dr. Dana, "was very good and modern treatment—no bleeding, no purgations, no polypharmacy." . . . The bishop began speedily to improve. When Cardan left, his patient promised to write in two years telling of his condition. "Cardan had the follow up system of today." He wrote out for his patient a document of twenty folio pages giving theory and treatment, and an outline of seven pages. Both these documents are printed in his *Opera Omnia,* published in 1563.

On his way home, he visited at the court of Edward VI, then fifteen years old, and was greatly impressed by the goodness, charm, learning and intelligence of the young king. The boy was delicate and Cardan was asked by the scheming English nobles, not to treat the young monarch, but to foretell, through astrology, the time of his death. Cardan saw through their plottings and made out a horoscope giving him twenty more years. But Edward died the following spring, perhaps poisoned.

Cardan was a great mathematician as well as a doctor and was responsible for introducing algebra into the schools of Europe. "Doctors were often mathematicians in those days. When Sancho Panza fell off his mule, he cried out, 'Send for an algebraist!'" On his return to Italy, Cardan visited several famous mathematicians and other noted men of the day. He finally reached Milan on January 3, 1553, after an absence of 310 days. His autobiography, *De Vita Propria,* has been called one of the three greatest in literature, the other two being those of Cæsar and Rousseau.

"Cardan was sensitive, affectionate, introspective, imaginative, superstitious, humorous, inclined to ideas of selfreproach, with high ambition and hypomanic industry. Concerning his own weaknesses, he admits that he was always inclined to sensuous pleasures. Of these, he adds, the worst and greatest was his love of music. In his book, he becomes very melancholy over this defect in his morals. He was not of the woman pursuing type, but he wrote some advice to his sons about love: "Love is a pleasant torture, a noble folly and a madness of a unique kind. It is the fruit of youth, the crime of age, to love and to be wise belongs to the gods alone.' . . .

"His career and writings reflect what was best in the art, practice, learning and ethics of the day. In his art he was not behind later centuries. In his ethics he was abreast even of those today."

Decline of the Doctrine of Spontaneous Generation.—The decline of this doctrine may be dated from the observations of Francesco Redi upon flies and maggots in the seventeenth century. Until Redi's time—1626-1699—it was generally believed that flies were spontaneously generated in putrefying meat. He placed meat in glass jars, over which he placed netting, then watched to see what would happen: flies smelling the meat in the jar, alighted upon the gauze, where they sometimes deposited their eggs or larvæ. No maggots ever occurred in the meat as long as the flies were prevented from getting at it. Redi came to the conclusion that the maggots were the half developed progeny of the flies, and that flies were not developed spontaneously. —*Fighting Foes Too Small to See.*

Egyptian Medicine.—The earliest known physician was Imhotep, a medical demigod, the Æsculapius of the Egyptians, who flourished about 4,500 B.C. The pharmacopœia of the Egyptians was exceedingly rich; one papyrus mentioned over seven hundred different drugs; hygiene reached a high stage of development. Medicine was associated with magic, and was a priestly occupation. The earliest recorded use of secretions and parts of the animal body as medicine is to be found in the medical papyri. While there are isolated fragments, such as the pyramid inscriptions, most of our knowledge of Egyptian medicine is obtained from the medical papyri.—*Annals of Medical History.*

Editorial Articles

UNCONCEALED WEAPONS

The concealed weapon is forbidden by law, though it is not nonexistent; the unconcealed weapon is greatly in evidence and carried by multitudes. The concealed weapon always was under the control of the user—at any rate, it never controlled the user, but the unconcealed weapon is the more dangerous in that it always partly controls its manager. A revolver may go off accidentally in a few cases, but the driver of an automobile takes the risk many times a day of running down the pedestrian, or other driver, who does not happen to avoid him.

The new weapon is especially dangerous on account of its size. It is as big as a small house and is, therefore, the more unmanageable and the more difficult to avoid. The new weapon changes the nature of the wielder. By virtue of driving an auto he becomes another man and has unavoidably another attitude toward his fellows. This is well illustrated by the example of a countryman of our acquaintance, a middleaged farmer, who was, for years, shy of the new vehicle and cursed it roundly for running down his chickens when they strayed upon the road. He was finally persuaded by a friend from the city to take a ride with him in his car, and about the first words he uttered were, "Why don't the farmers keep their damned chickens out of the road!" There you have it. The pedestrian's attitude had been reversed and the new attitude was that which produces destruction of life. And since the autoist's attitude is, of necessity, that of a man who is not in complete control of his weapon and cannot check it in an instant, the pedestrian, whether chicken or man, should keep himself out of the way or be damned, if not run over.

The problem is not to be solved by educating either pedestrian or driver. Some defensive device, some autostop device, to be carried by the pedestrian in selfdefence against the weapon propelled assailant, may be invented. It may be necessary to build separate ways for autos. If this new weapon were one used in war, of course all the inventors, backed by unlimited funds, would be hard at work upon the problem of checking its destructiveness, but, though, as Sir Arthur Newsholme said, "Peace has its horrors as well as war," we think little of our annual slaughter of innocents which would make many "great" battles sink into insignificance.

At least we could at present make the crimes of accidental wounding or killing by this huge unconcealed engine punishable by forbidding, in future, the driver ever to drive a car or, better, to make him a pedestrian for all his days. It would seem but a slight addition to the ordinary fines imposed, but it might help as a deterrent where there seems no other help in sight.

THE FUTURE OF PREVENTIVE MEDICINE

Stress is being constantly laid by leading members of the medical profession, and by men of science generally, on the point that in the conquest of disease preventive medicine will play the foremost part. The last great exponent of the medical art publicly to declare his adherence to these views was Sir David Bruce, himself instrumental in conquering Malta fever and in severely checking the aggressions of sleeping sickness. As president of the British Association for the Advancement of Science, which met in Toronto on August 6th and following days, Sir David Bruce in an eloquent address dealt with recent advances in knowledge of the treatment and prevention of disease. He said that in estimating the cash value of the prevention of disease it was calculated that the direct loss in England and Wales from sickness and disability amounted, at least, to £150,000,000. In the United States, with a much larger population, the loss was put down at £600,000,000 a year. In view of these facts, medicine must change its strategy, and instead of awaiting attack must assume the offensive. He pointed out that in this offensive campaign against disease that it must no longer be said that a man was so sick that he had to send for the doctor. The medical practitioner of the future must frequently examine the man while he is apparently well, in order to detect any incipient departure from the normal, and to teach and urge modes of living conformable to the laws of personal health, and the public health authorities must see to it that the man's environment is in accordance with scientific teaching.

He paid a fine tribute to Pasteur, who revolutionized medicine and its practice, declaring that it was his discovery of the germ theory that lifted medicine out of the region of vague speculation and set its feet firmly on new ground as an experimental biological science. The concluding part of Sir David Bruce's address, in which he considered the question of dietetics, was perhaps of the most immediate interest, taking into account the rôle now ascribed to diet in the production and consequently in the prevention of disease. In the consideration of diet he uttered a salutary and apposite warning, that as our knowledge was constantly increasing, our ideas about things were constantly

changing, and therefore what was looked upon today as absolute, immutable truth, was seen tomorrow in the light of some newer knowledge to be but a crude beginning. It was thus with the teaching concerning what constituted a complete and healthy diet. He discussed that much debated subject, the comparative freedom from disease of the untutored savage or primitive man. Until civilized man came into the regions in which dwelt the savage, living on the natural fruits of the earth and the chase, he knew no deficiency diseases. It was only when man began by artificial means to polish his rice, whiten his flour and can his food and vegetables that trouble started.

Housing conditions and food conditions in towns, as a rule, predispose to certain diseases and improvement in both directions should undoubtedly prevent disease to a considerable extent. In civilized countries the future of medicine lies largely in prevention and not less so in tropical countries. Malaria, for instance, can be much more effectively prevented than cured and so with all the insect borne diseases. In civilized lands it is the deficiency diseases which call chiefly for prevention, while in tropical countries it is the insect borne diseases.

As Sir David Bruce said, "The advance of knowledge in the causation and prevention of disease is not for the benefit of any one country, but for all, for the lonely African native, deserted by his tribe, dying in the jungle of sleeping sickness, or the Indian or Chinese coolie, dying miserably of beriberi, just as much as for the citizens of our own towns." In the prevention of disease a great deal will be effected by the better care and treatment of the pregnant woman, both before and after parturition, and the better care of infants and children.

It is in this branch of preventive medicine that the greatest expectation of quick results lie. Improved antenatal care, efficient midwifery under favorable conditions, and skilled postnatal care of mother and child will not only decrease mortality and morbidity but will enchance the chances of the rising generation physically and mentally. Although it is true that the future of medicine rests largely in prevention, there will be always plenty of scope for treatment, remedial and curative. In fact, the trend of the medicine of the future should but widen the sphere and enlarge the opportunities of the medical man. Public health measures have already eliminated certain epidemic diseases and are on the way to eliminate others in civilized countries and in the future better housing, improved domestic and personal hygiene, suitable and adequate diet will no doubt go far towards benefiting the general health. Utopia is not yet in sight and probably will never be reached, but the future of preventive and remedial medicine is hopeful.

MORE HEALTHY YOUNG WOMEN

Young women, at least those of the well to do class, are considerably more healthy than their sisters of a generation or so ago, and those of the working classes have also improved in health. This improvement in health is largely due to the different mode of life which girls of this era lead from that a few decades back. This improvement is even more marked in Great Britain than in this country. In the former land the Victorian girl was not athletic, did not play tennis, ride on horseback, swim, or run. In fact in those days it was not "good form" to do anything of the sort. The girl of the period took very little out of door exercise, was pale of complexion, it was not well bred to be of a ruddy countenance. She lived indoors mostly, did a great deal of fancy work, read sentimental novels, and for exercise played a placid game of croquet. Her manner of living is well depicted in the novels of Jane Austen.

But, *nous avons changè tout cela,* and now the pendulum has swung perhaps too far in the opposite direction. The modern girl emulates the male youth in exercise and sport. She plays tennis, golf, and indulges in athletic exercises of every description. In many forms of sport she not only takes part but even excels. She shoots and fishes and goes into the heart of Africa and off the beaten track in all parts of the world in pursuit of big game. *Pari passu* with these changed methods of living the young woman of the present day is amazingly healthy and anemia, the outstanding complaint of thirty or forty years ago, is almost at the vanishing point.

Dr. J. M. H. Campbell, in the August issue of Guy's Hospital report, sets out to show that chlorosis has decreased enormously since 1898 and seems to be becoming extinct. The lessened prevalence of this condition is sometimes attributed to improved conditions of housing, feeding, and to a higher standard of life in all respects. It used to be said that chlorosis was caused by hardship and poor feeding. Sir William Osler held that it chiefly occurred among ill fed, overworked girls of large towns, who were confined all day in close badly lighted rooms, and that lack of proper exercise and fresh air and the consumption of improper food were important factors. However, Dr. Campbell, after a close investigation of the subject, concludes that a study of the cost of living and of unemployment does not suggest that hard conditions of life and poor food are the main factors in producing chlorosis, though both appear to have a slight influence on its incidence.

With regard to occupation it is generally agreed that the condition is especially common among domestic help. In Campbell's series there were notes on the occupation in fifty-three cases. In thirty of these the patient was a household servant and in five

others a children's nurse or housemaid. In nine others the occupation was given as housework. In only nine were the patients employed in other occupations, such as laundry workers, clerks, housecleaners or packers. It certainly was not the diet which was chiefly responsible for the prevalence of chlorosis among domestic help nor was it the housing, for, as a rule, girls in such situations are better fed and housed than those who work in factories and so on.

After considering various possible hypotheses to account for this change, Campbell records his opinion that the disappearance of chlorosis is a very real change, and that it is mainly due to improved conditions of employment, allowing more opportunity for fresh air and exercise. He goes on to say that it should be possible to test such a hypothesis by comparing the amount of chlorosis among the class of Turkish women living in close confinement and among the women of the other Balkan States who live under similar conditions.

It has also been suggested that the disappearance of chlorosis was due to an inborn rather than an environmental change, but it seems, interesting as an evolutionary theory is, that the change is due more to different environment and a more healthy mode of living from all points of view. It may be pointed out that the British figures relating to chlorosis showed a decrease from 6.6 per cent. cases in 1898 to 1.5 in 1917. There is also good evidence that it has diminished in this country and Sweden, and verbal evidence of a similar change in France and Austria. Perhaps, therefore, the change is almost world wide, though not universal.

Every day now research shows that the influence on health of good housing and light can scarcely be overestimated and especially of light. Rickets and tuberculosis, the first named, of course, in particular, are favorably affected by light. Diet is an important factor but it appears as if environment is even more important. If light and good housing are eliminating chlorosis, why, if carried into effect on a far wider scale, should not tuberculosis and rickets be eradicated?

THE OPERATIVE TREATMENT OF CHRONIC GASTRIC AND DUODENAL ULCERS

In the field of surgery no subject of late years has been discussed so freely or written of so widely as surgery of the stomach and the duodenum. It must be borne in mind that surgical intervention in gastric or duodenal ulcer is of comparatively recent date, and the great mass of literature bearing on this subject testifies to the importance of the question and to the intense interest manifested in it.

Suturing perforating ulcer of the stomach was the first step in the more or less elaborate operations nowadays performed for a similar purpose, and Dr. Fred B. Lund, of Boston, who first published a report on the method in this country, in the *Boston Medical and Surgical Journal,* January 11, 1900, in the issue of the same journal for August 7, 1924 gives a brief and critical review of the surgical treatment of chronic ulcer of the stomach and duodenum from then up to the present time. He points out that the first successful operation on this continent was done by Dr. Atherton, of Frederickton, an account of which may be found in the New York *Medical Record* in 1895. The first reports of operation in cases of perforating ulcers began to be published in 1893 in the London *Lancet,* the oldest one on Dr. Lund's list is in the *Lancet,* vol. 1, p. 4, 1893. For demonstrating that chronic ulcer of the stomach would heal after gastroenterostomy the profession owes as much to Mayo-Robson and Moynihan as to anyone, and in this country the Mayos and the late John C. Munro and others have done much to perfect our methods.

Dr. Lund traces the development of various surgical methods calculated to render an operation effective and safe and concludes that the safest and simplest operation in the hands of most surgeons is gastroenterostomy with the clamp. In fact, in his opinion, such persistent attention has been given to perfecting this operation that it has become very simple and safe, at least in the hands of men who have practised it. Dr. Lund gives valuable advice as to the details of the technic and gives his reasons thus for the use of the clamps, because soiling is avoided, and the accurate apposition of the tissues is made so much simpler and easier, as the surgeon is not disturbed during operation by a rush of blood and the necessity for placing ties. He further points out that the one danger of the clamp, that of secondary hemorrhage after the operation, may be avoided only by the most careful and accurate placing of every suture. Indeed, the writer emphasizes forcibly the need for using proper sutures and doing the suturing in the most careful and painstaking manner.

Attention is drawn to another point, that in the early days a large proportion of the poor results from gastric surgery was due to faulty diagnosis. The x-rays have done much to make diagnosis more or less certain, and modern, careful perfected technic have done the rest. A warning is given that an ulcer at the duodenum should never be excised without a gastroenterostomy being done. Dr. Lund declares himself averse to resecting the ulcer bearing area of the pylorus and duodenum; he does not fear cancer at the pylorus as in his experience cancer has never

leveloped on the site of a primary ulcer. With regard to ulcers on the lesser curvature it is another story. They are not so apt to be benefited by drainage of the stomach and therefore by gastroenterostomy as is the case with ulcers at the pylorus. Their excision is bloody and difficult and for such cases Balfour's procedure is advised.

While Lund agrees with Mayo that the field for partial gastrectomy is greater in ulcers of the stomach than in the duodenum, in his experience the ulcers at the pylorus or first on the gastric side behave as well after gastroenterostomy as those of the duodenum. He emphasized the fact, too, that to resect safely an ulcer going well down to the duodenum one must be able to get at it easily. When the stomach cannot be drawn pretty well outside the abdomen resection is unsafe. Dr. Lund has had a long and wide experience in the Municipal Hospital at Boston and his conclusions on a still much debated question are valuable.

Especially interesting are his views as to the great unlikelihood of cancer appearing on the site of a primary ulcer on the pyloric side of the stomach, views contrary, perhaps, to the majority of abdominal surgeons. It may also be noticed that radical surgery is being more widely done in Central Europe on ulcer of the stomach and duodenum than elsewhere.

It appears that in Great Britain, although gastroenterostomy is extensively employed other methods are largely used. Some of the leading surgeons of London are not in favor of gastroenterostomy. It is evident that the last word has by no means been said yet with regard to the surgical treatment of chronic ulcer of the stomach and duodenum.

THE PROBLEM OF LEPROSY

While leprosy is not perhaps of direct interest to the medical profession of this country, it is estimated that the number of persons suffering from this disease here varies between 146 and 1,000. It is of interest because it is a malady of great historic concern and at the present time there is computed to be in the world, mainly in Asia, some two million two hundred thousand lepers.

In China, where leprosy is most prevalent, there are in the neighborhood of a million lepers. Next comes India with 500,000 lepers and Europe, including South Russia, has 7,044. In Africa there are at least half a million. In some of the Pacific Islands it is fairly prevalent, and some of our public health men have had considerable experience with the disease. India contains about one fourth of the leper population of the world, and it is in India that the most thoroughly organized research into, and treatment of, the disease on a large scale is being carried on and where consequently the best hope of its ultimate eradication may be looked for. The encouraging part of the leper situation in India is largely due to the fact that Sir Leonard Rogers, who is one of the most brilliant workers in the field, pursues his investigations in that country and has initiated and is developing research into its cause and preventive, remedial and curative treatment.

On March 16th, last, Sir Leonard Rogers read a paper before the Royal Society of Arts in London on recent advances toward the solution of the leprosy problem. The paper had an important bearing on questions of child welfare and education in those countries, mostly of a humid tropical or semitropical climate in which this dread scourge prevails. It may be recalled that some sixty years ago, high medical authorities held that the disease was not contagious nor communicable to healthy persons by contact with the disease and in accordance with this ruling, laws compelling or sanctioning measures of segregation were generally repealed. However, it has now been established beyond question that leprosy is a communicable disease for which isolation of the infective cases is the only certain means of preventing its spread. The experience of Norway in this direction is sufficiently convincing proof of its efficacy when adequately and persistently carried out. And therefore it is a serious question as regards child welfare and education in countries where the disease is prevalent.

Also there seems to have been abundant proof that the treatment associated with the name of Rogers ameliorates the condition of the patient, and, moreover, renders the disease less infective. Chalmoogra and other oils, but chiefly the former, have been employed with success. Another point worthy of attention is that the children of lepers do not necessarily inherit the taint. Yet such children exhibit especial susceptibility to the contagion. Hence children and adolescents should never be allowed to live under the same roof with a leper and infants of leper parents should be removed from them as soon as possible after birth. Rogers declared that long experience of India and elsewhere has proved that if the children of lepers are brought up apart from their parents, they remain free from the disease and can safely marry when grown and their children will not become lepers. He is of the opinion that if infection of the young could be prevented leprosy would rapidly decrease.

The Mission to Lepers, which devotes itself to the problem of segregation and of maintaining homes for the untainted children of lepers and which has been working in India for longer than half a century, has been doing magnificent work. It works in close co-

operation with government agencies, research authorities and other workers in the same field, and recently has been establishing the leper colony system in suitable areas so that a cottage system can be utilized for married patients with the advantages of home life, although, of course, healthy children must be removed from their parents at the earliest age.

Rogers emphasized the point that the greatest obstacle to the effective carrying out of segregation is the difficulty of isolating the early cases, which will continue to form foci for the spread of the disease as long as they have everything to lose and nothing to gain as heretofore. But he went on to point out that now that a treatment is available both for improving their condition and also rendering the disease far less infective by destroying so many of the causative bacilli, the situation is completely altered and already for the first time in the long struggle against leprosy in the Sandwich Islands numerous early cases have come forward in the more curable stages and asked for the new treatment.

A similar important change in the outlook is taking place in India and China. It may be said that hope for the future control of leprosy is encouraging. It would be premature to make any definite statements so far as Rogers's experience with chalmoogra, codliver and soya bean oils is concerned. A few early cases have not remained free from all signs of the disease for at least five years; while the infectivity of the disease is greatly reduced or completely removed in successful cases. It is interesting to note that a great deal of the work among lepers is done by medical missionaries and the nursing is done by missionary nurses; for the most part, white men and women.

A very great obstacle to the successful care and treatment of lepers is that few white medical men or nurses will consent to bury themselves in a hospital the inmates of which are Asiatics suffering from leprosy. It certainly says a great deal for religion that white medical missionaries and nurses will do so for the uplift of humanity spiritually and physically and for science.

It would certainly be invidious when discussing the problem of leprosy not to refer to the work done by several of the United States Public Health Service men who have made perhaps the most thoroughgoing investigations into the origin of and the treatment of the disease which have ever been made. But the immense resources of clinical material in India and the efforts being made by the Government and missions to prevent, successfully treat and control the malady render that country at the present time the centre of interest as regards leprosy and the country in which the final solution of the problem is most likely to be reached.

EDUCATION IN BUSINESS IDEALS, THEORY AND PRACTICE

The newer educational ideals combining training and actual practice in business and professional life are being tried out in a most interesting way at Antioch College in Ohio. This college combines in its six years course a general college education, special vocational training, and apprenticeship to practical life. Required courses give the student training in physical hygiene, in economic sense, and in the usual academic studies. Vocational courses help him to decide upon the vocation for which he is temperamentally best fitted, such as engineering, business administration, journalism, home and institutional management, and work along educational lines. Administrative ability in the individual is cultivated rather than a specialized technic. Halftime practice work in alternate shifts of five weeks with a number of prominent local business, professional and industrial firms helps to develop his sense of responsibility, and to enable him to decide upon and prepare for his particular vocation. The aim of the college is to narrow, through everyday methods of common sense and good will, the gap between theory and practice, thus bringing about a balanced development of character, intelligence, and power. "If we can develop an honest desire to work out sound business principles, and an honest effort to put them into practice, worth while results will follow," says a recent bulletin of the college. "Repeatedly men are torn between the desire to live by the finest ideals and the necessity for meeting practical issues in a practical manner. He is an educated man who, through experiencing this stress, has learned to harmonize such conflicting demands. Part time work at Antioch will accomplish its highest aim if it brings about that result." The Antioch business code is stated as follows: "Sound business is service which benefits all the parties concerned. To take profit without contributing to essential welfare; to take excessive profit; to cater to ignorance, credulity, or human frailty; to debase taste or standards for profit; to use methods not inspired by good will and fair dealing; this is dishonor. Whenever I make or sell a product or render a business service, it must be my best possible contribution to human well being."

News Items.

Scholarship for Graduate Study.—Scholarship on the Oliver-Rea Foundation for graduate study in medicine are available at the New York Postgraduate Medical School and Hospital. Inquiries should be addressed to the Dean, 301 East Twentieth Street, New York.

First Harvey Lecture.—Professor S. T. L. Sörensen, Director of the Carlsberg Laboratories, Copenhagen, Denmark, will deliver the first Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, October 4, 1924. His subject will be The Solubility of Sodium.

Postgraduate Medical School Lectures.—An announcement is made of lectures to be given at the Postgraduate Medical School, Wednesday afternoons at five o'clock, to which all practitioners of medicine are invited. The first three of these lectures are scheduled as follows: October 8th, Dr. Arthur F. Chace, Diagnosis and Treatment of Uric Acid Conditions: October 15th, Dr. Roger H. Dennett, Treatment of Diarrhea in Children; Dr. John I. Moorhead, Infections of the Hand.

Lister Medal.—The Lister medal for distinguished contributions to surgery has been awarded by the Royal College of Surgeons of England to Sir William Watson Cheyne.

Sociology at University of Wales.—Dr. G. Arbour Stephens, of Swansea, Wales, is endeavoring to encourage an interest in practical sociology at the University of Wales, and the Academic Board has recommended that various lectures be delivered.

Research in Electronic Energy.—A laboratory has recently been built at Alpine, New Jersey, for research work in electronic energy, to be carried on by Dr. J. Clawson Burnett, and Mr. J. H. Hallberg, a prominent electrical engineer.

Dispensary Social Service.—The Executive Committee of the Hospital Social Service Section of the Associated Out-Patient Clinics of New York, has published in pamphlet form a report prepared by Louise Stevens Bryant, Ph.D., on a study of social service in fifty-one dispensaries of Greater New York.

Police Emergency Hospital.—An x ray clinic and emergency hospital is soon to be opened in Police Headquarters, New York, for the use of members of the force and their families. Donations making the clinic possible were given by Mr. August Heckscher of New York and Mr. Frank Phillips, of Omaha, and surgical instruments and equipment were provided by Dr. Ernest Fahnestock, honorary police surgeon. Dr. Patrick J. Murray, chief surgeon, will be in charge.

Postgraduate Courses.—The following postgraduate courses are scheduled for New York: traumatic surgery, orthopedics, and rehabilitation, by the New York Postgraduate Medical School and Hospital; surgery, by the New York Homeopathic Medical College and Flower Hospital; skin diseases and cancer, by the New York Skin and Cancer Hospital; diseases of the heart and arteries, by Beth Israel Hospital; regional anesthesia, by New York University and Bellevue Hospital Medical College; pediatrics, by Columbia University and Mount Sinai Hospital.

Cooperative Store For Diabetic Patients.—A cooperative store for the sale of insulin and other supplies necessary for diabetic patients has been opened in Seattle, Washington, in space given by the Virginia Mason Hospital, which has also provided clerical supervision. The store will be open three hours a day. No profit will be made on any sales, and the price of the articles sold has been adjusted on a sliding scale, from full price to full charity. An endowment by a group of Seattle philanthropists, at the suggestion of Dr. Elliott P. Joslin of Boston, who recently lectured in Seattle, has made this benefaction possible.

Gifts and Bequests to Hospitals.—The following bequests are included in the will of the late Solomon C. Guggenheimer:

To the Federation for the Support of Jewish Philanthropic Societies of New York City, $40,000. To Mount Sinai Hospital, to endow a bed to be known as the S. C. Guggenheimer bed, $7,500. To the Lenox Hill Hospital, $2,500. To the Hudson Guild of the City of New York, $2,000. To the New York Association for Improving the Condition of the Poor, $2,500. To the Guild for Crippled Children of the Poor of New York City, $1,500. To the Children's Aid Society, for the use of the Newsboys' Lodging House, $2,000. To St. Luke's Hospital, $2,000. To the National Jewish Hospital for Consumptives of Denver, Col., $2,500. To St. John's Guild of New York City $1,500. To Roosevelt Hospital $2,500.

Personals.—Dr. Henry B. Young, of Burlington, Iowa, a former president of the state medical society, has been honored by a banquet in celebration of his fiftieth year as a medical practitioner.

Dr. Fred M. Smith, of Chicago, has been appointed professor of internal medicine and head of the department of theory and practice of medicine, at the medical school of the University of Iowa. He will succeed Dr. Campbell P. Howard, who has accepted a professorship of medicine at McGill University, Montreal.

Dr. John M. Frankenburger, of Kansas City, has been appointed superintendent of the Kansas City Hospital, succeeding Dr. William L. Gist, who has resigned.

Dr. Louis F. Arensburg, of Uniontown, Pennsylvania, has been elected commander in chief of the Grand Army of the Republic.

Dr. McCluney Radcliffe, for many years on the staff of the Wills Hospital, Philadelphia, has resigned as surgeon; he will be succeeded by Dr. Thomas A. O'Brien.

Community Health Work.—Due to lack of funds, the Community Health Association of Boston has been been compelled to release about fifty nurses and part of its executive staff. It is estimated that about 480 fewer persons each day can be cared for.

Hospital Ship.—The steamship *Arras* has been fitted up for a hospital ship by the Canadian Department of Marine and Fisheries and is now on duty on the Grand Banks, to provide medical aid and hospital treatment for fisherman, and in general for sailors on Canadian and Newfoundland boats that may be in that vicinity.

British Medical Association Prize Winners.—Dr. Edward Mellanby, professor of pharmacology at the University of Sheffield, has been awarded the Stewart prize, for discoveries on the relation between rickets and deficient diets, and Dr. Henry Britten Brackenbury has been presented with a gold medal for distinguished services to the association and the medical profession.

Research at Yale University.—Psychological research at Yale University has been provided for by a five year contribution from the Laura Spelman Rockefeller Memorial. This will be directed to the study of fundamental problems of behavior, and the training of personnel for subsequent studies. Roswell Parker Angier, Ph.D., professor of psychology at Yale, will be chairman, and Robert M. Yerkes, Ph.D., formerly of the National Research Council; Raymond Dodge, Ph.D., formerly professor of psychology at Wesleyan University, and Clark Wissler, Ph.D., of the American Museum of Natural History, will join him in the research.

Society News.—The thirty-second annual meeting of the Association of Military Surgeons of the United States will be held at San Antonio, Texas, November 13 to 15.

The annual meeting of the Medical Society of the State of Pennsylvania is to be held at Reading. Dr. William Allen Pusey, president of the American Medical Association, will be one of the speakers. The Berks County Medical Society, which has its own home in Reading, will provide entertainment.

The National Medical Association, an organization of negro physicians, recently held its annual meeting at Newport News, Virginia. Dr. Michael C. Dumas, of Washington, D. C., was elected president, and Dr. Walter G. Alexander, of Orange, New Jersey, as president-elect.

A conference including meetings of the Medical Association of the Southwest, the American Child Health Association, and the Kansas City fall clinical conference, will take place from October 13th to 16th. The Hon. Herbert Hoover, Mr. George E. Vincent, and Surgeon Generals Cumming and Ireland will speak. A tablet will be unveiled at Bell Memorial Hospital in memory of Liuet. William T. Fitzsimmons, of the Medical Corps, U. S. Army.

The Medical Women's National Association has elected Dr. Anna E. Blount, of Oak Park, Illinois, president; Dr. Katherine C. Manion, Port Huron, Michigan, president-elect; Dr. Elizabeth B. Thelberg, Poughkeepsie; Dr. Frances C. Van Gasken, Philadelphia, and Dr. Mary E. D. Dennis, Los Angeles, vice-presidents; Dr. Blanche M. Haines, Lansing, Michigan, secretary; and Dr. Ethel D. Brown, New York, treasurer.

The Chicago Medical Society has elected Dr. Jeremiah H. Walsh, president; Dr. Malcolm L. Harris, president-elect; Dr. Clarence W. Leigh, treasurer, and Dr. Roy R. Ferguson, secretary.

Historical Medicine Congress.—The Fifth International Congress of the History of Medicine will be held at Geneva, July 22 to 27, 1925, under the auspices of the Medical Society of Geneva. The officers are as follows:

Honorary president: Sir D'Arcy Power, London; honorary vice-presidents: Dr. Capparon, Rome; Dr. D. Giordano, Venice; Dr. E. B. Krumbhaar, Philadelphia; Dr. Laignel-Lavastine, Paris; Dr. I. G. de Lint, Holland; Dr. A. Patry, Geneva; Dr. Charles Singer, London; Dr. Triest-Royer, Antwerp. President, Dr. Charles Greene Cumston. Vice-presidents: Dr. Ernest Wickersheimer and Prof. Andrea Corsini; general secretaries: Dr. A. de Peyer and Dr. Emile Thomas; treasurer, Dr. Jules Pallard.

A preliminary programme of the Congress will be issued on December 1, 1924, and may be obtained at the Office of the General Secretary, 20 Rue Général Dujour, Geneva, Switzerland.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

London, *August 6, 1924.*

MEETING OF THE BRITISH MEDICAL ASSOCIATION

The annual meeting of the British Medical Association, the ninety-second of the series, took place at Bradford. The representative body met on July 18th and discussed medicopolitical matters. The most important subject dealt with was the policy of the association towards voluntary hospitals. The discussion was animated and prolonged especially with regard to the question of taxing individual payments. Mr. Bishop Harman brought forward a motion to the effect that "where the board of a voluntary hospital receives contributions from members in return for or in anticipation of treatment, the members of the visiting medical staffs should receive recognition of their services, either in the form of an agreed honorarium or by means of a percentage of all such payments being passed into a special fund.

PROGRESS OF MEDICINE

Mr. J. Basil Hall, M.A., M.Ch.-Camb., delivered the address as president of the association on July 22d.

The title of the address was The Yesterday, the Today and the Tomorrow of Medicine. Mr. Hall said he thought that we were tending to lose our veneration for the past; perhaps we were too conceited about our present, and expected too much of the future.

Rudyard Kipling accurately described our modern mental attitude when he wrote:

> Wonderful little when all is said,
> Wonderful little, our fathers knew,
> Half of their remedies cured you dead,
> Most of their teaching was quite untrue.

But having written this, he paid them just tribute by adding

> Yet when sickness was sore in the land,
> When neither planet nor herb assuaged,
> They took their lives in their lancet hand,
> And oh, what a wonderful war they waged!
> Yes, when the crosses were chalked on the door,
> Yes, when the terrible death cart rolled,
> Excellent courage our fathers bore,
> Excellent hearts, had our fathers of old,
> None too learned, yet nobly bold,
> Into the fight went our fathers of old.

As a striking and curious commentary on the lack of veneration for and even of appreciation of the doings of their distinguished forerunners, by the modern product of medical science Mr. Hall referred to the fact that the circumstances of the birth of anesthesia had been almost forgotten. He retells briefly the tragic histories of Wells, Morton and Jackson and drew attention to the depressing truth that a short time ago it was proposed that a public memorial should be raised to Horace Wells in New York, but the municipal authorities declined to entertain the suggestion. This year also the Lister memorial block of the infirmary in Glasgow was being pulled down to make room for extensions and alterations. Was he not justified in saying that we were losing our veneration for the traditions of the past?

It might be argued that Glasgow was only a very small corner of the world, and Lister's memory would always be revered throughout the whole universe. Nevertheless, while we boasted today about all the wonderful feats we could and did perform, how many of us gave a thought to the poor little dentist who first conceived the possibility of bringing them within our range? Mr. Hall took a tilt against the idol and lure of specialism so rampant nowadays. He pointed out that there was one specialism which the layman frequently failed to appreciate at its true value, the specialism of general practice. There was the fear that clinical observation might become a lost art. Radiography and all the modern scientific methods were good servants but bad masters. He would take the stand therefore, that their present failing was an overconfidence in modern technic and a lack of appreciation of the value of that wisdom which could only be obtained by personal observation and experience.

FOOD VALUES

The question of food values was once again threshed out. Dr. John Orr, director of the Rowett Research Institute, Aberdeen, read a paper before the Section of Public Medicine and Industrial Diseases on The Importance of the Mineral Elements in the Maintenance of Health. He pointed out that during the past few years there had been a tendency to regard the evil effects of too exclusive a use of certain refined foodstuffs "as due chiefly or entirely to a deficiency of vitamines." Recent work, however, had shown that many of these evil effects might be attributed to the lack of correspondence between the mineral content of the diet and the mineral requirements of the body.

Of the fifteen chemical elements making up the body ten were mineral elements, and each of these was known to perform functions which could not be adequately performed by any of the others. All these minerals were continually being lost from the body in the excretions, and all were required as the constructive material of growth. He pointed out that the ordinary diet of the town dweller was deficient in both calcium and iron. It had been estimated that fifty per cent. of American dietaries contained less than 0.67 per cent. of calcium which was well below the standard of one gram a day. In Great Britain the average intake was likely to be even lower, because the average consumption of milk, usually the chief source of calcium in the diet, was twice as high in America as in Great Britain.

Dr. Orr said that mineral deficiencies could be corrected easily by including milk, green vegetables and certain fruits rich in calcium; milk, egg yolk, and cereals contained sufficient of the embryo, and outer part of the grain was rich in phosphorus. Green vegetables and egg yolk were rich in iron. The only certain sources of iodine were green vegetables and codliver oil. He insisted that in practice the adjustment of the mineral balance was of more importance than the inclusion in the diet of substances supposed to be rich in vitamines. Indeed experiments at the Rowtree Institute had shown that if a diet were properly balanced with regard to

minerals the vitamine content would be quite satisfactory also.

Dr. John Sinclair Manson of Warrington, discussed the common errors of diet in an urban population. These showed a lack of broths, soups, meat, potatoes, vegetables, and the increase of "snippety" meals, consisting of preserved meats, pickles, bread, margarine and tea. There was an increased use of canned meats, canned fruits and especially canned milk. The amount of tea consumed in families varied from three ounces to eight ounces of dry tea per head per week. Over the whole country the average per head per annum was said to be nine pounds of dry tea. Dr. William Savage, Medical Officer of Health for Somerset, made a strong plea for educational work in connection with food. Dr. H. Scarfield, Professor of Public Health, Sheffield University, said that the addition of chemicals and preservatives to food should be prohibited in some cases and declared in all.

Dr. Simpson, of Golspie, Scotland, said that in the Highlands of Scotland in the past twenty years there had been deterioration through diet. The crofter, formerly took porridge, milk and mutton broth. He was then worth looking at. Tea had now largely taken their place. A resolution was adopted recommending that a Standing Food Committee should be appointed to consider the question of diet.

GENEVA LETTER

(From our own correspondent)

GENEVA, *January 25, 1924.*

FAKE ADVERTISING

Among the many hundreds of advertisements of manufacturing chemists of Germany which are now swamping Switzerland, there is one which arrived a few days ago which is too ludicrous to pass unnoticed. The prospectus states that the product is "untransformed milk, to which bacteria of less virulent origin are added." Just what we are to infer from "less virulent origin" is a mystery, since no bacteria of any origin are otherwise referred to. But marvelous to relate, this product given in subcutaneous injections cures *"pure cerebral epilepsy"* in the clinics of Mayence, Frankfort, Bonn, Vienna and Prague, not forgetting Heidelberg. This surprising product likewise cures cerebrospinal meningitis and lethargic encephalitis. One must suppose that the German neuron differs in structure from that of other races. The product is made in Dresden, but I will refrain from giving its name as you will undoubtedly be advised of its virtues directly from the Fatherland with a brazen attempt made to test the guillibility of the American profession as in other countries.

ILLEGAL MEDICAL PRACTICE

As illegal practice of medicine is not uncommon in the United States and frequently comes before our law courts, the following case tried before the Paris Court of Appeal may not be devoid of interest. Let it be said that the French law of November 30, 1892, defines in clear terms the illegal practice of medicine as follows: This misdemeanor is committed by anyone who, not a possessor of a diploma of doctor of medicine, habitually takes part in, or gives directions for the treatment of medical or surgical cases. Certainly this definition is not ambiguous.

The difficulty in application of this law resides in the fact that numerous quacks have attempted to divert the legal definition by maintaining that there is no illegal practice if the patients have not been subjected to a personal examination. It has also been put forward that if advice is given in a general way through the medium of a book or pamphlet this did not conflict with the law but that it is otherwise when therapeutic measures have been prescribed individually for the patient. But from the viewpoint of the French code, it makes little difference whether the treatment is given by means of a pamphlet, if it is a question of treating a disease from which a person *is* suffering.

The case in question before the Paris Court of Appeal was that of a person who thought he could evade the law by prescribing appropriate treatment for a disease described to him by the patient in writing.

By advertising, he attracted the attention of patients who wrote to him their symptoms, after which they in return received a pamphlet giving the treatment of their case, as well as the cost of treatment. As the accused supposed that as he had never seen the patients and had not given manuscript prescriptions, there was no illegal practice. On this point the Court of Appeal replied that the existence of the misdemeanor in no way supposes a visual examination nor a manuscript prescription, and that in this instance illegal practice is sufficiently established from the fact that, without a diploma of M. D., the accused solicited by extensive advertising his clientèle.

The following are the principal decisions of the Criminal Court where the case was first tried. "Whereas, the widow Bouvard, herborist, solicited a clientèle by means of advertisements in the lay press which said medical advice would be given on some twenty different affections, if patients would apply (by writing), and the use of certain decoctions of herbs would be explained in a pamphlet containing twenty different cures—the work of one Hamon, a priest—offered gratuitously to all those who suffered; that in reply to patients' letters, attracted by this advertising, Bouvard forwarded the pamphlet in question, the cover of which bearing the portrait of the priest Hamon, and containing a preface signed by Hamon; that the profits realized from the sale of medicinal decoctions attained annually the sum of 150,000 francs, and that Hamon, who did not possess the diploma of M.D., had given to Bouvard the right to use his name, and to prepare and sell medicinal products of his own recipes on the condition that he should receive monthly payments in consideration for same; that it was also always by permission of the plaintiff the pamphlet had been published, edited and distributed to patients who asked for it, and in which the author of the work for them prescribed an exactly outlined special treatment for each of the twenty diseases.

"Whereas, from the ensemble of these circum-

stances it results that with the complicity of the priest Hamon, widow Bouvard, who did not appeal from the decision handed down against her, gave advice to patients and habitually took part in the treatment of their ailments; that it is a matter of indifference that neither Bouvard or Hamon did not examine the patients and that the appropriate treatments were prescribed otherwise than by manuscript prescriptions; that in point of fact, art. 16 of the law of November 30, 1892, does not make any provision for visual examination or the writing of a prescription, which are the constituting and necessary elements of the misdemeanor. Hence it follows that the decision of the Criminal Court, that Hamon is guilty of the illegal practice of medicine, is sustained and his appeal rejected.

MEDICOLEGAL

A case of tort presenting some rather unusual legal points was tried in the First Chamber of the Civil Courts at Paris on November 24th last. I will give the essential points of the case as they are highly interesting from the viewpoint of medical jurisprudence.

Returning from Bordeaux to Paris by the morning express a Parisian businessman—Mr. Berthonaud by name—was the victim of an accident in the Montparnasse station (Paris) on June 21, 1923, which resulted in death on July 7th, in the following circumstances. As he was about to alight from his compartment after the train had stopped, the door was suddenly shut by a passing truck pushed by a station employee, crushing the fingers of the left hand. Transported at once to Necker Hospital Mr. Berthonaud received the necessary treatment, including a precautionary antitetanic serum injection, after which he returned to his home. Now, a few days later the injured hand presented the characteristic signs of a peculiar type of infection known as Arthus' phenomenon, which in some instances is a sequel to antitetanic injections. By his physician's advice the patient was urgently admitted to hospital where he died, and his widow brought action against the State Railway Company for damages.

The company held that it was not responsible for accidents occurring to passengers alighting from its cars and that if it was necessary for the victim of an accident to be given an injection of antitetanic serum, the phenomenon of infection resulting from the injection could in no circumstances be considered as a necessary sequel of the accident.

The Court did not sustain this argument and in conformity with the arguments of the widow's lawyer, it maintained the responsibility of the railway company. It decided that in the matter of transportation of passengers, the responsibility of railway companies subsisted as long as passengers were still within the company's station and, on the other hand, since the administration of antitetanic serum was a generally admitted practice in the actual state of medical science and in the circumstances in which it was given to the victim, the morbid phenomena which might be the consequence should, in the given circumstance, be regarded as necessarily belonging to the accident requiring the injection. Therefore the Court ordered the railway company to pay 50,000 francs damages to the widow.

GONORRHEA

As an abortive treatment of gonorrhea made in Germany, we would call attention to intravenous injections of glucose. These are given in conjunction with urethral injections of protargol. It would appear that the process of cure is as follows: The intravenous injections of glucose produce an intense pullulation of the gonococcus, but these neoformed gonococci are extremely sensitive to the urethral protargol injections, destroying them with much greater facility than when the glucose is not exhibited.

With all the innumerable abortive treatments of gonorrhea which have been devised—mostly by German chemical manufacturers—during the past twenty-five years it is curious that still another should be put on the market for the consumption of the medical profession. The treatment under consideration is abortive in name only, because a treatment requiring a fortnight to effect a cure cannot be regarded as especially rapid.

The *modus faciendi* is simple, a fifty per cent. solution of glucose being used in doses of forty centimetres to the injection. Protargol urethral injections are well known. A cure is said to be obtained in from eight to fifteen days, during which time an average of six intravenous glucose injections are given.

As in all other abortive treatments of gonorrhea the great difficulty in obtaining a successful result rests upon the rapidity of the patient's consent to treatment. To inject a concentrated glucose solution intravenously is certainly an act not devoid of possible complications, and although infrequent, they nevertheless occur, since Scholtz and Richter—the initiators of the treatment—refer to them, particularly venous thromboses which, fortunately, have so far been of mild degree.

TYPHOID IN FRANCE

In a French village of two thousand inhabitants, twenty-nine cases of typhoid developed before prophylactic measures could be vigorously applied. One hundred and seventy-three subjects were vaccinated with typhoid-A and B paratyphoid vaccine and 1,236 others with Besredka's bile vaccine taken *per os* three successive days, in the form of compressed tablets of vaccine and one bile pill. Twenty-one new cases of typhoid developed in unvaccinated subjects, while among those vaccinated with the T. A. B. vaccine in four the disease developed on the fifth to the twelfth day following the last injection, while only five cases developed out of the 1,236 persons receiving the bile vaccine, and three of the five developed during the day or on the following day after this prophylactic treatment had been given.

Besredka's bile vaccine offers no contraindications and produces no discomfort, hence it is more readily accepted by the public, especially because it is given by mouth.

RENAL DISEASE

Professor Gougerot, of Paris, has related the following very interesting case of the hematuric renal form of nitritoid crisis following the intravenous use of 914. A physician with fibrous tuberculosis, presenting pulmonary febrile congestive attacks and with syphiliphobia into the bargain, developed muscular gummata of the arm which were proved later to be tuberculous by animal inoculation. At the time

ne lesions were first discovered, the patient de-anded that he receive antisyphilitic treatment and uring an apyretic period of his pulmonary tubercu-sis administered to himself three intravenous in-ections of 914, in doses of 0.15 to 0.30 and 0.45 espectively. As soon as the first injection was iven the patient complained of lumbar pain and ome flushing of the face; with the second, the pain ncreased, while with the third the nitritoid facial henomenon recurred, although mildly, but, on the ontrary, the lumbago was intense, confining the atient to his room, and one hour later he passed loody urine.

One week after this episode, the patient admin-stered to himself another injection of 0.45, but first njecting one milligram of adrenalin, with the result hat the same syndrome took place, namely, a mild acial nitritoid crisis lasting five minutes, intense ilateral lumbar pain lasting for ten hours, then lowly subsiding, the total duration being twenty-our hours. Immediately after the injection, there vas an intense desire to micturate, with hematuria uring the first twelve hours.

In this case there can be no doubt that the nitritoid risis caused renal congestion, resulting in lumbar ain and hematuria. It is likewise probable that here existed a renal predisposition—a congestive enal bacillosis—which attracted the nitritoid crisis o this *locus minoris resistentiæ,* but this supposition ould not be proved, because three animal inocula-ions with the urine remained negative.

DIABETES

In a very interesting clinical lecture delivered by Professor Nobécourt at the Hospital for Sick Chil-lren, Paris, on June 2nd last, on diabetes in chil-lren, he pointed out, among many things, that re-ardless of the numerous researches, the pathogene-is of diabetes mellitus is still badly understood. It s known, however, that the disease arises from a listurbance of the glyco-regulating system, that the issues and viscera of diabetic subjects are incapable f consuming in carbohydrates ingested, with the re-ult that glycosuria and hyperglycemia ensue.

Besides the glyco-regulating disturbances a renal lement intervenes in certain circumstances, but this s not a renal diabetes that one meets with occasion-lly and is the result of renal hyperpermeability to lucose. In the former condition an inverse phenom-non occurs, namely, a rise of the threshold of glyce-nia. It is a phenomenon comparable to that bringing bout azotemia or chloruremia in the nephritides. This is a fact that must be taken into consideration n practice in order to appreciate the influence of diet luring treatment. In point of fact, there are cases n which the glycosuria becomes slight or even dis-ppears and yet the percentage of glucose in the lood remains quite high or even increases. Con-equently, when diabetics are followed, it is essen-ial not only to watch the percentages of the glyco-uria, but also that of the glycemia.

Leaving aside treatment with insulin, which has ts special indications, the treatment of diabetes con-ists of diet poor in carbohydrates or even none whatsoever, and then carefully by experiments to ascertain the amount of carbohydrates tolerated without causing the glycosuria to reappear.

LATIN AMERICA LETTER

(From our own correspondent)

Balboa Heights, C. Z., *May 2, 1924.*

THE ROMANCE OF THE TROPICS

One of the beauties of living in this tropical paradise is its romance—not the romance of gorgeous silver moons and anopheles mosquitoes, or verdant sabannas and red bugs, but the romance which comes from imaginative travelers who come from the hinterland with tales of white Indians, buried treasures and the like. Just now the legend is that of the inhabited pre-Incan city of the Darien. Several years ago, so it is related, a daring flying man actually saw this old stone city nestled in the jungles far in the land of the Cuña Indians. Flying low, he discovered that it was inhabited by white men and women. Right there ends the narrative. Who this aviator was and why he never followed up his find, nobody knows. Perhaps his imagination ran down. At any rate a celebrated author believed the tale and preserved it in one of his books. Recently, he has returned to the Isthmus and outfitted for exploration work. He is reported to have gone into the San Blas region and it is believed that he is in search of the fabled city which has thus far eluded every explorer since the days of Lionel Wafer, who was Dampier's surgeon and lived with the natives of that section in the seventeenth century. While it is improbable that he will discover this mythical city, he may find things of value and interest. There are plenty of evidences of bygone civilization all over Central America and without doubt there are plenty of architectural and monumental remains there which are still hidden. The descendants of those who erected some of them still exist and their ethnology is a subject which demands increasing study. The botany and zoology of this region have never been subjected to intensive research; the field for exploration is by no means exhausted and every expedition brings back additions to our store of knowledge.

THE POISONOUS SNAKES OF PANAMA

Dr. Thomas Barbour, of the Institute for Research in Tropical America, the Museum of Comparative Zoology and the School of Tropical Medicine of Harvard University, has sailed for Cuba after spending several months on the Isthmus of Panama. He has done an enormous work in the completion of the laboratory at Barro Colorado Island, which is already the Mecca for research workers in tropical biology. Dr. David Fairchild, of the United States Department of Agriculture, Professor William H. Wheeler and Dr. George H. Parker are expected to begin work at the laboratory in early June, and other noted scientists will join them soon after. Before sailing Dr. Barbour gave an illustrated popular lecture at the Balboa Community House on The Poisonous Snakes of Panama. To a packed house he explained the mechanism of the poison glands and fangs of snakes in general and exploded the tommygoff myth by saying that "a tommygoff is any snake of which a Jamaican is afraid." According to Dr. Barbour the venomous snakes of Panama are among the most poisonous in the world, including four varieties of true coral snakes, the small palm-

viper, the bushmaster and the *fer-de-lance*. There is only one variety of rattlesnake known to exist on the Isthmus. There is a sea snake which is frequently seen on the Pacific, sometimes several miles out at sea, which is exceedingly poisonous. So far as is known, there is only one variety of poisonous toad in this locality, the *Dendrobates tinctorius*, about two inches long, almost black in color with bright green markings on its back. This furnishes the active ingredient of the arrow poison of the Colombia Indians. They heat it alive over a slow fire when a thick whitish fluid is exuded from the dorsal surface of the toad. Arrowheads rubbed in this excretion are intensely poisonous.

NEW CHIEF HEALTH OFFICER

Colonel H. C. Fisher, Medical Corps, United States Army, who has so successfully discharged the important duties of Chief Health Officer of the Panama Canal for the last four and a half years, will be relieved on June 21, 1924, by Colonel W. P. Chamberlin, Medical Corps, United States Army, who sails from the United States on June 12th for that purpose. Colonel Fisher will assume command of the Army Medical School at Washington.

SANTO TOMÁS HOSPITAL OPENS

The New Santo Tomás Hospital is now operating, sixty-eight patients having been transferred from the old institution. It is expected that the occupancy of the new plant will be completed in August and that the formal inauguration of the institution will take place in September. The buildings of the old plant are located in a congested portion of the city and will be remodelled as modern school buildings of which Panama is greatly in need.

THE GORGAS MEMORIAL ORGAN

As a memorial to Major General W. C. Gorgas, it is planned to install the finest church organ in Central America in the Episcopal Cathedral of St. Luke at Ancon, C. Z. Largely through the efforts of Dr. Gorgas, St. Luke's Church, the predecessor of the present cathedral was erected. It was a small wooden structure and was located on the grounds of Ancon Hospital and Gorgas was for many years its Senior Warden. Already $5,000 have been subscribed for the purchase of the memorial organ.

CANAL ZONE MOTHERS ORGANIZE

On April 11, 1924, the Canal Zone Association of Mothers was formally organized at a meeting called under the aegis of the Health Department of the Panama Canal. It was addressed by Dr. W. C. Cox on The Relation of a Mothers' Club to the Community. Colonel H. C. Fisher, Medical Corps, United States Army, the Chief Health Officer, spoke on The Community and the Spread of Infectious Disease, and Surgeon C. P. Knight, United States Public Health Service, delivered an address on Mothers' Associations. Chapters of the association have been formed on both sides of the Isthmus and are already doing good work. The publicity campaign which Colonel Fisher has so actively championed is continuing and the "How To Keep Well" column in the English and Spanish papers of Panama is being read both in the homes and the public schools; thus the community health consciousness for positive public health is being awakened and sustained.

DEATH OF DR. VAZ

Dr. Charles Alfred Vaz, for many years *Medico oficial* of Bocas del Toro and one of the best known physicians of that Province, died suddenly on April 8, 1924.

PRIZES FOR ARGENTINA PHYSICIANS

The jury designated in the Concurso Nacional de Ciencias of Buenos Aires awarded the first prize of 30,000 pesos to Dr. Bernardo J. Houssay for his work entitled The Physiological Action of the Hypophysis, the second prize of 20,000 pesos was divided between Dr. Fernando Perez and Dr. Joaquin Llambias respectively, for their works, The Study of Comparative Anatomy in Relation to Otology, and Lessons from Pathological Anatomy and Physiology. Dr. Houssay is the director of the Physiological Institute of Buenos Aires and his investigations have provoked much attention both at home and abroad.

DELEGATES TO THE LEAGUE OF NATIONS

The President of Paraguay named as medical delegates to the meeting held in Berne, Switzerland, of the second, third and sixth sections of the sanitary section of the League of Nations, Dr. Bemigno Escobar, director of the Asistencia Pública, Dr. Alberto Schenoni, dean of the Faculty of Medicine, Dr. Carlos Leon, Military Surgeon, and Dr. Andres Gubetich, physician of the National Hospital.

COSTA RICAN GRADUATES

Fourteen diplomas were issued as the result of the December examinations given by the Board of Medical Examiners at the School of Obstetrics and Nursing at San Jose, Costa Rica.

NEW MEDICAL FACULTY

On January 5, 1924, the new board of directors of the Medical Faculty of Costa Rica was installed. Those composing this body are, president, Dr. Solón Nuñez; secretary, Dr. Ricardo Moreno Cañas; treasurer, Dr. Benjamín Hermández; attorney, Dr. Constantino Herdocia and Dr. Carlos Pupo, Dr. Roberto Chacón and Dr. José Maria Barionuevo. The medical faculty has taken charge of the Maternity Hospital in San Jose. It plans to hold a series of clinical conferences.

NOTES FROM CHILE

In 1923 the Woman's Anti-Tuberculosis Association of Santiago expended 70,369 pesos and had a balance on hand of 19,417 pesos at the close of the year. This organization supports two antituberculosis dispensaries in the capital, where 539 patients were attended during the month of December, 1923.

The Experimental Hygiene Section of the Army, which has an excellent clinic and carries on valuable work in Santiago, has decided to send representatives through the southern portion of the Republic to give information and treatment in regard to the social diseases. The medical officers composing the commission will not confine their work to garrisons and garrison towns, but will endeavor to inaugurate clinics wherever they may be needed. Lectures, motion pictures, posters and pamphlets will be used in propaganda against venereal diseases.

The graduates of fifteen of the sixteen normal schools of Chile assembled in the Capital, Santiago, to receive their diplomas and were addressed on that

occasion by Dr. Pedro Lautaro Ferrer on The Teachers' Opportunities in Health Education, and by Dr. Ernestina Pérez on Alcoholism and Tuberculosis, the latter speech being illustrated by moving pictures.

The executive board of the Patronato Nacional de Infancia announces that a payment of 5,000 pesos of the 8,000 peso legacy bequeathed the society by Sra. Elvira Caldera de Eastman have been received, as well as the 100,000 pesos left by Sr. Florencio Luna, also that Sra. Bazo v. de Cruz had willed the Patronato 25,000 pesos. These funds have been placed at the disposal of that organization to continue its child welfare centres and similar activities in Santiago. Since the announcement of these gifts another of 50,000 pesos has been received.

A school for male nurses has been opened in connection with the San Juan de Dios Hospital in Santiago with fifteen students in attendance. The course of instruction, which is both theoretical and practical, covers two years. Instruction in the case of patients in their own homes is also given and a good course in the rudiments of public health nursing. It is believed that this will help the cause of preventive medicine in Chile very considerably.

An anonymous donor has given the sum of 500,000 pesos for a clinic of diseases of the eye, which will be built in connection with the San Vicente Hospital in Santiago. Besides a clinic for outpatients and a classroom, laboratory, and library, there will be twenty-five beds. Dr. Carlos Charlin Correa, professor of ophthalmology, will be the director.

Letters to the Editor.

ALCOHOLIC POISONING

GREAT NECK, N. Y., *August 29, 1924.*

To the Editor:

In the MEDICAL JOURNAL AND RECORD of August 20, 1924, there is an editorial article entitled "Better Late Than Never"—claiming a cure for alcoholic intoxication, which does not seem to me to be justified. To begin with, alcoholic intoxication is nothing but a poisoning by alcohol and any treatment overcoming this condition should be classed as an antidote.

An antidote for alcoholic poisoning has been known to a few physicians since before 1908, when I first became acquainted with it. I was then house physician on the First Medical Division at Bellevue Hospital. Dr. E. LeRoy Dow was assistant visiting physician of my division and told me one day to use six to eight drops (not minims) of pure carbolic acid well diluted in any case of severe alcoholic poisoning. Some time later a drunken man was admitted on my service about 2 p. m. He was too severe a case for the alcoholic ward. He was almost pulseless, his heart's action was weak, he breathed with difficulty and he was unconscious. I gave him caffeine and strychnine by hypodermic injection. A few minutes later, when his pulse and respiration were better, I washed out his stomach with warm water, and at the end of this procedure, poured an ounce of epsom salts dissolved in about one and a half ounces of water, down the stomach tube and then withdrew it.

About an hour after his admission, I dissolved four drops of pure carbolic acid in four ounces of cold water and gave it to him to drink. About 4 p. m. I gave him another two drops in two ounces of water. At 6 p. m. he was as sober as any man can be. He had no headache or nausea, and he asked permission to leave the hospital, which I granted.

This case is on record at the hospital and as far as I can remember, he came under my care about October, 1908. Carbolic acid acted as a true antidote and I cannot imagine any antidote whose action would be quicker and more efficient.

Since those days I have had several cases of alcoholism and a few drops of carbolic acid sobered them in a couple of hours. When I look back I can think of one mistake that I made, namely, washing out the stomach with water—I should have washed it out with six or eight drops of carbolic acid dissolved in a quart of water. In that case the man in question would probably have been sober by 5 p. m. instead of an hour later.

Men who have taken drinks—especially whiskey and cocktails—and who later on have to attend some society function and do not wish the odor of alcohol on their breath, need only take two or three drops of carbolic acid in two or three ounces of water, and all evidence of alcohol will disappear in about ten minutes. Of course the delightful feeling of *bien-être* will disappear too.

I am amazed at the fact that medical textbooks and books on poisons and their treatment, do not mention carbolic acid as an antidote for alcoholism. As carbolic acid neutralizes alcohol, it naturally follows that alcohol will neutralize carbolic acid. I shall illustrate this by a case. When I was on the Children's Service at Bellevue Hospital from October, 1907, to the end of that year, a child was brought in to whom its mother had given a teaspoonful of carbolic acid by mistake. The child was in coma, the pulse could not be felt, nor could the heart beat be heard, as there were so many sibilant and sonorous and bubbling râles in the lungs. In a case like this one has to think and act quickly, and it flashed across my memory that I had cauterized wounds with carbolic acid which I neutralized by alcohol. So naturally I made a weak solution of alcohol and washed out the child's stomach with it, and at the same time the nurse got ready a hypodermic syringe with adrenalin and gave the child five minims.

A quarter of an hour later I gave another injection of four minims of adrenalin. The adrenalin was given to stimulate the lungs and overcome the congestion there. In less than an hour the child came to and was crying in the mother's arms. This case is also on record at the hospital.

Here again is another antidote, viz., one for carbolic acid poisoning. Yet cases of this kind were frequently admitted in the alcoholic ward but never in my time treated by washing out the stomach with alcohol. Nor will you find any mention of this treatment in any textbooks or books on poisoning. It is strange, is it not?

I know of other cures that have been ignored by the medical profession, but I shall not mention them here, as I do not wish to take up your time.

F. TWEDDELL.

Book Reviews

GASTRIC AND DUODENAL ULCER

Gastric and Duodenal Ulcer. Two Lectures. A Record of Ten Years' Experience. By Sir Berkeley Moynihan. Bristol: John Wright and Sons, Ltd.; New York: William Wood and Company, 1923. Pp. 48.

Moynihan's definition of an ulcer of the stomach or duodenum is "a visible and palpable lesion which has existed for months or years. In it are seen clearly the evidences not only of destruction but of stubborn defence; there is a crater of varying size; in depth the ulcer involves at least the muscular coat, and may extend completely through all the coats, an acute perforation being prevented only by the firm adhesion of the ulcer to a neighboring structure which then forms its base." Gastric ulcer, according to the author, is a rare condition. In case it cannot be removed by operation Moynihan performs a gastroenterostomy combined with jejunostomy. The patient is fed through a tube which passes directly into the jejunum, and no smallest quantity of food, solid or liquid, is given by the mouth. The healing of the ulcer, which is watched by screen examination with the x rays, is always very slow and requires six months to three and three quarter years.

Moynihan deprecates medical treatment and sees the only salvation for the patient in surgery. Of duodenal or jejunal alimentation which nowadays can be done by the duodenal tube without recourse to jejunostomy, not a word is said.

In duodenal ulcer three operations are applicable: 1, excision of the ulcer; 2, anastomosis of the stomach to the duodenum, with or without excision of the ulcer; 3, anastomosis between the stomach and jejunum. In postoperative jejunal ulcers of greater severity (profuse hemorrhage, etc.) Moynihan again advocates a jejunostomy for feeding the patient until he is able to stand the risks of a radical operation. There again the duodenal tube would make the temporary operation of jejunostomy superfluous.

The lectures contain many useful points.

GASTRIC AFFECTIONS OF RENAL ORIGIN

Gastropatias de Origen Renal. Estudio Clinico y Patogenico. By Juan Raoul Goyena. "El Ateneo." Buenos Aires; La Semana Medica, 1924. Pp. 191.

This excellent book of Professor Goyena on gastric affections of renal origin is of great importance. It is the first monograph on this subject compiled in book form. Goyena says: "The action of the kidney can influence the stomach in four different ways; 1, purely through the nerves; 2, through the blood; 3, through both blood and nerves, and 4, mechanically. The gastric manifestations evoked by floating kidney (or nephroptosis) are thus described by Goyena: "The dyspepsia which accompanies a movable kidney can be of either the hyposthenic or the hypersthenic type. In the first instance there is present atony of the stomach, flatulence, habitual constipation, and occasionally abdominal pains and vomiting. Nausea is likewise frequently encountered. The patients assert that their troubles set in with the commencement of the digestive period and complain of fullness and distress in the gastric region. Sometimes these symptoms appear before the meal is finished, and last for some time. A sleepy sensation and general fatigue are also encountered.

The epigastrium is usually painful to pressure. Further examination of the abdomen occasionally shows tenderness over the kidney region, which is of great assistance in the diagnosis. The gastric secretion is usually not much changed in this variety.

In the hypersthenic form pyloric spasm is frequently met with. Here there appear pains late after meals and vomiting is often encountered.

THE DUODENAL TUBE

Le Tubage Duodénal. Ses Applications Cliniques. Dans la Collection Médecine et Chirurgie Pratiques. M. Chiray et J. Lebon. Avec 24 Figures et 2 Planches en Couleurs. Paris: Masson et Cie, Editeurs, 1924. Pp. 208.

Die Duodenal-Sonde und Ihre Anwendungsmöglichkeit. Von Max Einhorn. Deutsche Ubersetzung von Lillie Oberwarth. Leipzig: Verlag v. Georg Thieme, 1924.

Chiray and Lebon give in this monograph an excellent exposition of the important work done in America, Germany, and especially in France, with Einhorn's duodenal tube. In case of chronic jaundice, according to Chiray and Lebon, the following rules can be laid down by the results of the duodenal intubation regarding differential diagnosis. A. When the duodenal contents show absence of bile and pancreatic juice at the same time, and no blood, the probability is that we have to deal with a neoplasm of the head of the pancreas. B. When absence of bile and pancreatic juice is associated with blood in the duodenal contents, we usually have to deal with cancer of the papilla of Vater. C. When there is no bile but pancreatic juice present in the duodenal contents, we have to deal with compression of the choledochus, either by a calculus, a neoplasm, or constriction by adhesive bands.

* * *

A few weeks ago a German edition of Einhorn's recent book *The Duodenal Tube and Its Possibilities*, appeared on the market. Whoever has taken the time to study the various chapters of this book must have been impressed with the originality and the ingenuity of the author in inventing and constructing useful instruments, which have made accessible to diagnostic research and conservative nonoperative treatment "from above," the entire gastrointestinal tract down to the pelvic colon, inclusive of the secretions of the liver and pancreas as they are physiologically discharged into the duodenum.

Inasmuch as a thorough revision of the book appeared in a number of medical journals three years ago, a more detailed discussion of the many interesting procedures described therein and elucidated by an abundance of instructive illustrations will not here be entered into again. It is best to study them "at the source," although curious to state, the first edition of the book, four years ago, which was soon sold, has so far not been reprinted by the publishers nor have important additions on the part of the author been made accessible to the medical profession in a second enlarged edition. It certainly is

grettable that the price was not made higher from ıe start. Perhaps it would then have been con- dered worth while by the publishers to bring out ırther editions of a work so pregnant with new ıd useful ideas. Surely arrangements should be ıade at once that the English edition of this book ɔes not remain permanently "out of print," that a ew edition is placed at the disposal of those col- agues who wish to own a copy, instead of forcing ıem to hunt it up in shops that deal with "antiquated ɔoks."

The new German edition is a replica of the orig- ıal English one, with the exception that chapters on ver, gallbladder, and bile duct affections (pp. 39- 5), on cardiospasm and pylorospasm as discovered y the delineator (pp. 104-115), and on the treat- ıent of ulcerative colitis by colon lavage from above pp. 127-142) have been added.

It is a subject for congratulations to the German ɔeaking colleagues abroad, that the contents of this ractical and compact book have now been made ccessible to them. It will no doubt bring untold essings to suffering humanity, also on the other de of the Atlantic, and will in many emergencies ıtimated in the book—for example, the conservative eatment of the duodenal fistula, so difficult and nsafe to treat in reduced patients by operative pro- ɛdures—contribute to save life.

It is to be expected that translations into all the ɛher modern languages will soon follow. Wherever ıtelligent medical men and women carry on their gitimate practice, Einhorn's pathfinding work in ıe diagnosis and conservative treatment of diseases f the gastrointestinal tract and attached important lands should be thoroughly studied and employed.

THE DYSPEPTIC STATE

'Etat Dyspeptique. Affections du Tube Digestif. Dans La Collection Médecine et Chirurgie Pratiques. Léon Meunier. Avec 37 Figures et Schémas. Paris: Masson et Cie, Editeurs, 1924. Pp. 128.

In this little book of 128 pages Meunier presents is philosophy of the dyspeptic state. He defines ıis condition as a nonspecific painful syndrome hich includes all gastroduodenohepatic pathology. Ie believes that at the bottom of this painful state ıere is always impaired gastric motility. This con- ition in turn produces a two fold defense on the art of the stomach, namely, by aerophagia, and by rolonged secretion. The symptomatology is then urther developed and an outline for the diagnosis f the chief etiological factors is presented. These actors are: 1, Functional (neurosis); 2, gastritis; , gastric ulcers; 4, biliary lithiasis; 5, duodenal lcer. In these sections of the book the author de- ɛribes his test for digested blood in the gastric con- ɛnts, his method of aspirating the stomach with the atient leaning forward over a table, and his method f testing the duodenal contents for alkalinity.

The therapy of the dyspeptic state is then pre- ented, the chief parts of interest being the use of ıedicinal saline solutions of such cryoscopic con- entration as to favor gastric evacuation, strength- ning of the abdominal wall by special physical exer- ises, use of hot infusions to aid digestion, and pecial dietotherapy.

The book makes interesting reading.

DISEASES OF THE DUODENUM

Etudes médico-radio-chirurgicales sur le duodénum. Par Pierre Duval, Jean-Charles Roux, Henri Béclère. Paris: Masson et Cie, 1924. Pp. 269.

Duval, Roux, and Béclère give in this important work an excellent exposition of the diseases of the duodenum. According to the authors, a periduodenitis due to cholecystitis, as evidenced by adhesions between the gallbladder and duodenum, is a very frequent occurrence. Even after a cholecystectomy it is apt to persist and necessitates occasionally a second operation. The writers are convinced that adhesions frequently form after cholecystectomies, but that they ordinarily give no rise to clinical symptoms, unless when they begin to interfere with the motor power of the duodenum or when they lead to a stenosis of this organ. In these instances a gastroenterostomy becomes necessary. Under the term "primary stenosing periduodenitis" the authors describe adhesions over the duodenum *not* due to gallbladder lesions nor to any ulcerative process within the duodenum. Here also a gastroenterostomy becomes necessary when the obstructing symptoms become manifest. This excellent book on the duodenum is herewith highly recommended to the medical profession.

OBESITY AND CONSTIPATION

The Culture of the Abdomen. The Cure of Obesity and Constipation. By F. A. Hornibrook, F.R.C.S., D.P.H. (Ireland). Preface by Sir William Arbuthnot Lane. New York: William Wood and Company, 1924.

This is a book of sixty-eight pages, the last eighteen of which describe the *daily eight* which are the exercises used by Mr. Hornibrook. This system is recommended by Sir Arbuthnot Lane, consulting surgeon to Guy's Hospital, the writer of the preface. Dr. Lane makes the statement that Mr. Hornibrook has treated a large number of people most successfully. The purposes of these exercises is the treatment of constipation and reduction of the waistline. They are suitable for attaining these objects and therefore it is easy to understand why Mr. Hornibrook has been successful as Dr. Lane states.

TEXTBOOK ON X RAY DIAGNOSIS

Lehrbuch und Atlas der Röntgendiagnostik in der Inneren Medizin und Ihren Grenzgebieten. Herausgegeben von Franz M. Groedel. Weiterte, vollkommen umgearbeitete und wesentlich erweiterte Auflage. Mit 712 Abbildungen auf 179 Glansdruk-Tafeln und mit 720 Text-abbildungen. 1 und 2 Halbband. Lehmann's Medizinische Atlanten, Band 7. München: J. F. Lehmann's Verlag, 1924. Pp. 1109.

This fourth edition in German has been enlarged by the addition of 42 plates and 180 illustrations in the text, also by sections on the constitution of men in röntgen pictures; on pathological lung pictures, on röntgenological differential diagnosis of abdominal diseases by means of pneumoperitoneum; on röntgen diagnosis in diseases of childhood. The list of contributors has been given here because they are among the great men not only in röntgenology but in the various specialities in medicine.

To one unfamiliar with the previous editions this must be described as a monumental book of the greatest interest and full of absolutely essential information for those making or interpreting x ray pictures or using the fluoroscope. The chapter on

apparatus and technic would be a sufficient guide for the beginner in x ray work and proceed to such advanced details as the orthodiagraphic and teleröntgenographic measurement of the heart. In each of the clinical sections the normal x ray appearance is fully demonstrated, as well as the greatest variety of pathological conditions.

The text and its drawings make the work an invaluable textbook for one seeking to qualify himself as an expert in röntgen diagnosis and also as a book for reference by the röntgenologist and the physician.

The normal pancreas never shows in ordinary radiographs. But Hassel has demonstrated it by having the stomach and intestines thoroughly emptied, extreme pneumoperitoneum (inflation of the peritoneal cavity with air or oxygen or carbon dioxide), the x ray tube underneath, patient prone, if very heavy take off some of the pressure by cushions under sternum and pubis, plate over the back, very soft tube and exposure as short as possible. The pressure from the weight of the body causes the gas to escape rapidly through the puncture by which it was introduced and it may also infiltrate the tissues, emphysema extending to the neck sometimes. The diagnosis of the pancreas abnormality, such as tumor or cyst, made by means of an ordinary radiograph directly or from its effect upon the outline of the stomach, is one of the subjects discussed.

Special chapters give the fullest and most accurate information regarding x ray diagnosis in diseases of the brain, spinal cord, and peripheral nerves, of the eye, of the ear, of the jaw and teeth, of the upper respiratory tract, of the thorax including the diaphragm, to mention only one quarter of the topics. A complete bibliography accompanies each chapter.

The 712 radiographs are reproduced by an autotype process which gives an almost perfect similarity to a photographic print, gloss and all. And although some of them are quite small the screen employed is so fine that a magnifying glass may be used without losing details of the picture.

ENDOCRINOLOGY

An Outline of Endocrinology. By W. M. Crofton, B.A., M.D. New York: William Wood and Company, 1924.

A most convenient manual giving a concise and aptly illustrated résumé of the essentials of endocrinology. This book does not enter into competition with the more ponderous tomes dealing with the many theoretical considerations of the internal secretions, but is admirably suited for the purpose for which it was intended.

HEREDITY

Race Hygiene and Heredity. By Hermann W. Siemans, M.D. Translated and Edited by Lewellys F. Barker, M.D. Illustrated. New York and London: D. Appleton and Company, 1924. Pp. 178.

A considerable debt is due to Barker for his admirable translation of this monograph on heredity. The text is brief, and brings the salient points into sharp outline. The reading of this small book is both interesting and stimulating. In spite of the many limitations imposed by our numerous pseudo and actual cultural layers, we get a slight glimpse into a future when many of the findings of men of science like Galton, Weismann, and others will be made use of.

PHYSICAL DIAGNOSIS

Perkussion, Auscultation und Palpation der Brust und Bauchorgane. Ein praktischer Grundriss. Von Dr. L. Dünner und Dr. R. Neumann. Mit einem Vorwort von Geh. Med.-Rat Prof. Dr. George Klemperer. Mit 5 Abbildungen im Text. Wein und Berlin: Urban and Schwarzenberg, 1924. Pp. 154.

This is a practical manual of physical diagnosis designed for students. There is accordingly no discussion of the physical basis of physical signs but rather a correlation of the facts of physical diagnosis with their clinical and anatomical basis. It represents the method of teaching of Professor Klemperer in the IV medical clinic in the University of Berlin. Chapters are devoted to the physical examination of the healthy lungs, heart, and abdominal viscera, as well as to these organs in the diseased state. Two chapters, giving in outline form abnormal physical signs that may be elicited in the lungs and heart, should prove of real value to the student.

BIOLOGY

Moderne Biologie. Heft 6. Die Heterogenetischen Hammelblutantikörner und Ihre Antigen. Dr. Hans Schmidt. Leipzig: Curt Kabitzsch, 1924.

The refinement of specialization could scarcely go further than the production of a monograph on the heterogeneous antibodies produced in sheep's blood by the injection of various antigens. Those laboratory workers whose business in life necessitates their being informed on such subjects will find this a useful compendium of what we know, with an up to date bibliography.

THE CARE OF CHILDREN

What Every Mother Should Know About Her Infants and Young Children. By Charles Gilmore Kerley, M.D. Second Edition, Revised. New York: Paul B. Hoeber, 1924. Pp. 103.

This little book, although published in pamphlet form, is attractively gotten up as to cover, paper, and typographical form. Doctor Kerley writes in his preface that it has been prepared as a ready reference for busy mothers regarding the care of their children, and that its purpose is to place in the hands of the mother of moderate means, concise, readily understood and practical instruction. The subject matter is discussed under thirteen headings, including hygiene, maternal nursing, artificial feeding, food formulæ for well infants, feeding from first to sixth year, diet after sixth year, dentition, ailments, first aid to the baby, general instructions, general considerations, don'ts, and formulæ.

CHILD MEMORIES

The Birth of Psyche. By L. Charles-Baudouin. Translated by Fred Rothwell. New York: E. P. Dutton & Co., 1924.

This small delicately tinted volume is well named, for from the secret depths of the child mind rises evanescent, exquisite, the being that is to be. A collection of child memories, not so significant in themselves, yet rich in association material for the author. Most interesting, perhaps, is the fact that these supposedly earliest recollections may well be threshold memories, covering still earlier recall from an unbelievably tender age. The steam roller dream and obsession would probably lead very far back.

One wonders whether it is possible to recapture mosphere. The sketches would seem to have done perfectly. But are the remembered thoughts what child really thinks? Did he have perceptions that ould be remembered for those aching, uninterpreted nages? Can one ever again really see with the lim- d eye of a child? Psyche, being born, falls in love id becomes a woman. Thus each of us having be- me men and women, looks back to draw a trem- ling breath at those early memories, those stirrings f ourselves. Is there really anything left!

ZOOESTHETICS

he Man in the Zoo. By David Garnett. New York: Al- fred A. Knopf, 1924. Pp. 119.

Not having read the famous *Lady Into Fox* by iis author, we have probably missed his fantasy : full bloom. *The Man in the Zoo* is an elabora- on of an interesting idea, but it does not waken :her ideas in the reader's mind. It is well worked ut—the singled thought—Why not exhibit man mong the other mammals? A little romance weaves bout the idea and behold it is a book. The sort f delightfully chintz bound volume to place on ie night table for the week end guest at a country ouse. Not likely to disturb his slumber either by ight or day.

ATAVISM

rdeal. By Dale Collins. New York: Alfred A. Knopf, 1924. Pp. 298.

We have been following the hypothetical, daily fe of primitive man of late, and Collins's book gives ascinating support to placid scientific theory. No udent of anthropology could have made out a bet- r case for social evolution, for Freudianism, for ie unchanging truth of the unconscious mind.

The book pictures five people on a little yacht in iid-Pacific; five people of the polished acme of ociety. A great gulf yawns between them and the rew, bridged by Ted, the steward, alien to either ass. Insufficiently equipped, undermanned, the acht bears its burden further and further from ivilization towards the "thrill" the wealthy own- rs are seeking.

The thrill comes not as they expected. In fact ie absence of thrill is their undoing. Becalmed, iaddened by heat, silence, their own society, the ve slip bit by bit through every culture level to es- ential beginnings. Paul Thorpe, the owner, as a aveman would have been as long suffering with is wife, save for flares of tired jealousy, as he is n the yacht. Vazey Howard, nice young man, ould even in paleolithic days been upstanding but everent towards the "old man." Woman's emanci- ation in the last centuries has told on Viola Thorpe o a certain extent. She clings rather to the sensu- us medieval level, but there are slips back to more rimitive strata. Essentially, however, her prosti- ute complex is laid bare, the undercurrent in so iany neurotic lives. While the torture of the weeks rings Dorothy Daley, the chilly English girl, to uller, more natural expression than she had ever nown before. Then there is Lady Daley, Dorothy's eaf aunt. The world does not change for her since er whole world is within her. She only of them ll faces things, sees with apparent uncanny shrewd- ess each step in advance. But the things are ob- vious, and only obscured by the unreality of the experience. They are all of half a mind that it is a bad dream.

Through the terror grins the bestial face of Ted, the fox, the viper. From fawning stewardship to brutal master, he progresses upward, wreaking his long pent resentment on the society that has counted him inferior. The storms and ominous calm of the tropic seas, waver and crash outside and inside the ship. The elements have in Mr. Collins a sympathetic, vigorous historian, whose perspective on mere man in the gigantic turmoil of the cosmos is both admirable and refreshing.

The reader must follow for himself the steps leading up to the sacrifice, the final winning free from the talons of Ted. The book is not one to love and reread like a familiar friend. It is too arresting. But it will never stale and will meet each mood with its primal tang and bite as pronounced as at first reading.

SOMBRE PATTERNS

The Dark Night. By May Sinclair. New York: The Macmillan Company, 1924. Pp. 126.

Miss Sinclair seems to be experiencing the unrest of many writers over the fatuousness of words. In life what do words matter. They mar living. They prevent thought. The most vivid experiences come in muscle flashes, reflexes, that have to be painfully translated into words—words that in turn mean nothing to the reader except by retranslation into the original impulses.

For years Miss Sinclair has been getting down to bed rock. Her stories have been pared down and pared down to simple shock of forces, feeling against feeling, instinct against instinct. She has been working herself out, along with the other curious animals inhabiting this planet. There are not many avenues of human behavior that she has not explored.

It all comes down to one thing, an elusive pattern, grey, grim. Love is *reality*—not happiness. And the reality of a primeval patter has colored all Miss Sinclair's romances.

There is always someone, something to wreck the perfect blending of souls. It may be the animal in man, or it may be some psychic conditioning that dreads great happiness for fear of retribution. There is usually in Miss Sinclair's books an idealistic love, the kind dreamed of by adolescents. It endures and suffers empty handed while passion is temporarily regnant. In the end the idealistic love triumphs, either actually, or by selfimmolation.

In this latest story Miss Sinclair has given only a story sketch, like the first draft of highly impressionistic verse. She had here the makings of a powerful novel—was it lack of patience that caused it to be left? We do not think so. Rather, perhaps, the souring on her tongue of words, words.

As a poetic rendering the book is unremarkable. It bears an uneasy resemblance to the *Song of Songs.* It echoes the *Elder Edda.* But that does not make it literature. On the whole it is humdrun in style, though not in matter.

Elizabeth, heroine, and a poet hero are to marry. The poet cannot bear to be caged, he flees to Italy. The long suffering Elizabeth finds God in her lover's

place during his absence. But they do marry in the end, and some five years later, Monica, a perverse ward to whose happiness Elizabeth is dedicated, comes to live with them. The poet loves the ward. Elizabeth sets him free, and finally when poverty comes to the couple and their child, gathers them in again. (All except Monica who has found a better provider). Altogether a childish performance, pitiful because so often repeated in real life. There are people who wallow in distress. Elizabeth is one of them. They surround themselves with others who unconsciously prey upon their weakness. On the whole the book would be a fair enough clinical picture of masochism, were it not for its sentimentality. That ruins it. It loses all value as propaganda, even as art. No wonder Miss Sinclair couldn't make a novel out of it. To spread a subjective lather over the requisite pages for a big work, one has to believe in it. We are thankful Miss Sinclair does not.

THE TWENTIETH CENTURY IN THE MAKING

These Eventful Years. The Twentieth Century in the Making. As Told By Many Of Its Makers. Illustrated. Two Volumes. New York: Encyclopedia Brittanica, Inc., 1924.

Surveys are so frequently handled by middlemen, literary and unliterary beings picked for their seeming aptness for the special job on hand. The result is homogeneous, more inclined to be flat than thrilling, or is thrilling lacking the ring of accuracy. The chroniclers of the twentieth century in the making, however, are the actual figures in its shaping. They are not writing men necessarily. They are something more. They have lived what they describe. They have been so close to the turmoil of battle, to the whirlpool of discovery, to high peaks of achievement, that they bring to their descriptions the *feel* of themselves shining through their careful details. One may think that the best judgment comes from the disinterested spectator. But not in this case. Fifty years from now, a hundred years, these directors of destiny will still start from the page as personalities. What they achieved will be something greater than bare fact because of what these men and women are.

The war, its causes, its course, its outcome and aftermath, occupy most of the first volume. The resultant condition in Europe, the hopes the nations have for themselves, and the triumph of the new century over the old, especially evident in Chinese history as written by former Ambassador Wellington Koo, round out in admirable fashion the overshadowing events of the troubled period which we hope is drawing to a close.

What of the rest of the Twentieth Century? The second volume projects it—nationally, scientifically, in the arts, in every conceivable department of human interest. There is food for every thinker in these volumes, not just opinions that he will value no more highly than his own, but the authoritative voice of the greatest thinkers on each subject. For the time being all animosities are forgotten. We get the honest beliefs of men and women on their own life interests. What could be more magnificent a human document!

The list of contributors includes names so well known that one cannot cite some and leave the others unmentioned. Suffice it to say that these two volumes give the gist and equivalent of the careful thought of nearly eighty of the greatest men of action, thinkers, writers, physicians, explorers, scientists, that this century knows. *These Eventful Years* is *the* indispensable handbook. It is a library in itself, a treasure house of everything that has been done and well done during these busy times that dash over us almost without our realizing them.

Medicoliterary Notes.

The *Century* for August contains a number of worth while articles, among them *The Betrayal of Our War Veterans,* by Charles Merz; *The Sense of Immortality,* by Philip Cabot; *The Lip-Lazy American,* by Edward W. Bok; *America's City Civilization,* by Shaw Desmond; *The Discovery of Truth in Universities,* by Walter Dill Scott, and *Irony in Velvet,* a discussion of James Branch Cabell's stories by Carl Van Doren.

* * *

The book review section of *Mental Hygiene* for July contains among others interesting reviews of the following works: *The Recreating of the Individual; A Study of Psychological Types and Their Relation to Psychoanalysis,* by Beatrice M. Hinkle, M.D., reviewed by Dr. C. Macfie Campbell of the Boston Psychopathic Hospital; *Psychoanalysis and the Drama,* by Smith Ely Jelliffe, M.D., reviewed by Karl A. Menninger; and *The Ku Klux Klan,* by John Moffatt Mecklin, reviewed by Nancy Boyd Wiley. Articles of special interest in the same number are *Constructive Possibilities of a Mental Hygiene of Childhood,* by Bernard Glueck, M.D.; *A Study of Certain Autoerotic Practices Based on the Replies of 2,255 Women to Questionnaires Prepared by the Bureau of Social Hygiene with the Advice of a Cooperative Committee; Part I;* and *A Plea for Greater Frankness in Dealing with Those Who Are Mentally Sick,* by Ransom H. Sartwell, M.D.

* * *

On Being Shocked is the title of an entertaining essay by Stephen Gwynn, quoted in a recent issue of the *Living Age* from the London *Spectator.* After an amusing discussion of the present day prevalence of the will to shock, and the unquestioned value of being shocked, the writer brings to a more serious concluson by stating that "it is well not to forget that a society or a person no longer able to be shocked has lost in this fastidiousness a quality which is akin to honor—which is indeed honor in another aspect; not noisy, not querulous, nor quarrelsome—for those in whom disgust strikes deepest at a gross word or ugly action keep least cry about their sensibility—but an instinct guiding conduct and judgment to avoidance, just as surely as honor prompts to do."

* * *

In a recent number of the Berlin *Deutsche Allgemeine Zeitung,* Prof. Friedrich von Lucanus writes on the sense of locality and power of orientation in men and animals. He believes that in both the basis of the instinct is an innate sense of the main points of the compass, and advocates that the theory be made the subject of experiment by scientists.

* * *

Osteopathy's First Half Century is the title of a pamphlet by George W. Riley, Ph.B., D.O. A résumé of the history of this branch of medicine is given from the time of its establishment by Dr. Andrew Taylor Still to the present day.

* * *

Some interesting statistics on divorce in the United States have recently been published. According to the Census of 1922, there was one divorce to every twelve marriages in this country; today, there is one to every seven marriages. The divorce ratio is steadily progressing westward. Among American cities, San Francisco probably holds the record for the largest number. For the year ending June 30, 1923, one of every two marriages in that city ended in a divorce. Except for the District of Columbia, which had only one

divorce for every 35.8 marriages, New York State shows the fewest divorces—one for every 22.6 marriages, Georgia has the next fewest, one for every 19.4 marriages. Pennsylvania has one for every 10.2 marriages. Montana has the highest—one divorce for every 4.3 marriages, with the exception of Nevada, the mecca of divorcés, which is in a class by itself and where the number of divorces granted exceeded the number of marriage licences.

* * *

In 1309 the first clock known to the world was placed in the tower of San Eustorgio in Milan. In 1344 a clock was installed in the palaces of the Nobles at Padua. This was a wonder of mechanism indeed, for, besides indicating the hours, it showed the course of the sun, the revolutions of the planets, the various phases of the moon, the months and the fêtes of the year. In 1420 an alarm clock made its appearance. The chroniclers have placed on record that this clock sounded a bell at a stated hour, and at the same time a little wax candle was lighted automatically. How this was done we are not told, but it must not be overlooked that until about a hundred years ago we had no means of obtaining light other than the tinder box.—*Jeweler's Record.*

* * *

According to Dr. James J. Walsh, it was Pope Innocent III who established the prototype of the modern city hospital, with its purpose of caring for the acutely ill, who may have none to care for them properly, and for the injured. This pope summoned Guido from the medical school at Montpellier to Rome and founded for him the Hospital of the Holy Spirit in the Bargo not far from St. Peter's, where it still stands. This was the mother and model hospital for the world at that time, and visitors came from many parts of the world to admire and to return home to found similar institutions.

* * *

A recent publication of Knopf is *Recreating Human Nature; an Exposition of the Making of Psychology,* by Charles W. Hayward.

* * *

The city of London maintains a museum for the instruction of young constables in the ways and methods of the criminal classes. It is called the Black Museum and contains many queer and uncanny exhibits.

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A new novel by D. H. Lawrence has been announced by Seltzer who will publish it. The title is *The Boy in the Bush* and the scene Australia. Lawrence collaborated in writing the book with Miss M. L. Skinner.

* * *

Dr. John A. Conway, New York State District Health Officers, reports, in the *American Journal of Public Health* for July, an outbreak of typhoid fever due to infected ice.

* * *

"When Is an Exhibit?" is a reprint from *The Transactions of the Seventeenth Annual Meeting of the National Tuberculosis Association.* It contains many good pointers on exhibits and their material and arrangement. Copies may be had upon application to the Association, 370 Seventh Avenue, New York City.

* * *

Professor Charles R. Stockard of Cornell University Medical College has in the April number of the *American Journal of Medical Sciences* an interesting article on the Relation of Alcohol to Racial Degeneracy. The writer believes that it is highly improbable that man has ever injured his normal resistant germ cells with alcohol. Nations that have used the strongest alcoholic beverages for many generations have outstripped other nations with less alcoholism in their history. Prof. Stockard attributes this to the elimination of those whose powers of resistance were not normal. He, like so many of the eugenists, is of the opinion that protection and preservation of the unfit are making for racial degeneration.

* * *

Dr. Alice G. Bryant, of the New England Deaconess Hospital, Boston, has in the *Medical Woman's Journal* for June an interesting and timely article entitled Phases of Heating and Ventilation That Might Occupy the Attention of Rhinologists and Otolaryngologists as well as All Members of the Medical Profession. The article is significant for New York City in particular, where heating conditions in apartment houses, public buildings, and especially public conveyances have been allowed to lapse into such inadequacy since the war economies proved that if it has to, the public will "stand for anything." Dr. Bryant's article is continued in the succeeding number of the *Journal.*

* * *

The School of Speech Education of Boston conducts during the Summer a free speech clinic, with classes for stutterers, the feebleminded, and those with whistling, phonetic and cleft palate defects.

* * *

A recent issue of *L'Echo de Paris* comments upon the fact that late statistics show that the Anglo-Saxons are the only people who patronize freely the French air lines. "This," according to the paper, "accords with their more sporting and adventurous temperament." The nationality of travelers who used aeroplanes in France last June was as follows: Americans, forty per cent.; English, thirty-four per cent.; Dutch, seven per cent.; French, six per cent.; miscellaneous, thirteen per cent.

* * * *

An article in the *Ice Cream Trade Journal* states that the art of making ice cream probably originated in Italy before 1600. Martha Washington, it is said, served ice cream on her table. There is a tradition to the effect that the first American ice cream seller's name was Hall and that he had a shop in Park Row, New York City, when its name was Chatham Street.

* * *

Travelers about to book passage for the Argentine are surprised to learn that among the various documents and certificates of which they must be possessed is one showing that they have not been in jail for the last five years. This requirement may cause hilarity on the part of the wouldbe passenger until he or she remembers that such a document may not be so easy to produce, regardless of the fact that the interested person has been entirely innocent of acquaintance with jails. The certificates must be obtained from the authorities of the locality where the passenger resides and must be written on the letterhead of police or court authorities. It must be viséd by the Argentine Consul. —*New York Times.*

* * *

The People's Institute Publishing Company of New York City has announced that it will issue in pamphlet form under the general title of "The Lecture in Print" stenographic transcriptions of the lectures of prominent scholars and scientists. The lectures are to be taken down in shorthand when delivered and later edited by the lecturer. The first series of lectures to be published in this way will be those given by Everett Dean Martin at the Cooper Union on "What psychology has to teach you about yourself and the world you live in." These will be followed by a series of lectures by Dr. John B. Watson on behavior psychology, and others by authorities on biology, evolution, etc.

* * *

The fame of the Municipal Matrimonial Advice Bureau, established in Vienna in 1922, has spread far beyond the boundaries of Austria and its popularity at home is rising rapidly. A German investigator has recently reported that the eighty-seven applicants for advice in 1922 rose to more than 500 in 1923, and every day the office receives letters from persons of many countries and nationalities asking for information and advice in matrimonial affairs. The institution was intended primarily to serve citizens of Vienna who are contemplating marriage and are not quite sure of their physical, mental and economical qualifications; however there are frequent calls for counsel as to preventing divorces and bringing about family reconciliations. The Matrimonial Advice Bureau emphasizes the necessity of good health, and, where an examination reveals traces of tuberculosis, venereal diseases or other serious ailments, the applicant is referred to his physician or to the sick benefit society of which he is a member. Through publicity and education the bureau hopes to bring about results that will permanently benefit the coming generation.

Abstracts from Current Literature

GASTROENTEROLOGY

Abdominoscopy.—O. P. Steiner (*Schweizerische medizinische Wochenschrift,* January 17, 1924) describes a technic, in which a puncture opening is made under local anesthesia above or below the umbilicus with a thick trocar. An endoscope of the size and form of a medium sized cystoscope is introduced into the opening and air is inflated into the abdomen through the endoscope. In this way the interior of the abdominal cavity, the various organs and pathological conditions are readily observed within the abdominal cavity. Very good vision is obtainable in this way. The author has never seen any harm resulting from this procedure.

Drainage of the Peritoneal Cavity.—Paul Albrecht (*Wiener Klinische Wochenschrift,* January 10 and 17, 1924) calls attention to the fact that drainage of the peritoneal cavity is practically impossible and should, therefore, be used as little as possible. Drainage with gauze and wicks should be avoided. In suppurative peritonitis, the source of the infection should be eliminated and every defect of the peritoneum should be covered over. After operations within the first two days, as long as the physiological protective apparatus is still functioning properly, it is better, as a rule, to close the abdominal cavity, provided the source of infection is removed, the hemorrhage is absolutely controlled, and all defects of the peritoneum are closed. Cases of diffuse suppurative peritonitis, that have lasted longer than five days, should be drained. Cases lying within these two conditions must be treated according to the individual experience of the surgeon.

Production of Formaldehyde by Intestinal Bacteria.—B. H. Shaw (*British Medical Journal,* March 15, 1924) found that the amount of formaldehyde produced by various intestinal bacteria varied between 0.0001 and 0.0015 per cent. The test for formaldehyde might be used to classify and identify bacteria, especially in the colon and proteus groups. There are various ways in which formaldehyde arising from bacterial action may interfere with cellular respiration which, arguing from the constantly observed association of confusional mental states with profound destruction of erythrocytes in cases of malignant malaria, and certain other facts bearing on states of acidosis, is, of the utmost importance to the maintenance of mental health. The treatment implies an attempt to replace the offending organisms by an innocuous type, which is very difficult. The Bacillus acidophilus may be used for this purpose but a recurrence usually follows. A more practical method is to give regularly liquid paraffin combined with occasional doses of salts and to restore the general tone to the system. The use of calcium salts might also be borne in mind.

Cutaneous Hyperesthesia in Acute Abdominal Disease.—Zachary Cope (*Lancet,* January 19, 1924) says he has found hyperesthesia in numerous cases of acute appendicitis, perforated gastric or duodenal ulcer, cholecystitis, cholelithiasis, primary peritonitis, salpingitis with pelvic peritonitis, acute tuberculous peritonitis, ovarian cyst wth twisted pedicle, renal colic, pyelitis, abscess of the spermatic cord, intestinal obstruction and acute dysentery. The author considers cutaneous hyperesthesia as an important means of assistance in diagnosis of acute abdominal disease. Since various disorders are accompanied by similar hyperesthesia it follows that increased cutaneous sensibility must not be taken by itself to prove the existence of any particular lesion. All the symptoms must be considered together before arriving at a diagnosis. Nevertheless, in acute disorders this particular symptom can almost always be taken as signifying inflammation or irritation of a viscus or of some part of the peritoneum. The extent of the hyperesthesia bears no direct or constant ratio to the extent of the lesion. General peritonitis may be entirely unaccompanied by cutaneous hyperesthesia, while appendicitis without any peritonitis may cause widespread bilateral cutaneous manifestations. Patients who have a reflexly active or hypersensitive nervous system are more likely to exhibit extensive hyperesthesia. Occasionally mental shock may have an influence. Sometimes removal of the cause leads to an almost immediate disappearance of the hyperesthesia, but quite frequently the skin only gradually returns to normal.

Significance of Oidium in Chronic Gastric Ulcer.—F. Merke (*Schweizerische medizinische Wochenschrift,* January 10, 1924) demonstrated the presence of the Oidium albicans in seventy-five per cent. of sixteen cases of chronic resected gastric ulcers and in twelve perforations from ulcer. He was usually able to produce typical oidiomycoses by maceration of the skin with a wet dressing and rubbing of the fungi into the skin. The maceration resulting from the action of the gastric juice in the gastric ulcer also favors the occurrence of the fungi, which fact may be of significance in the chronicity of the ulcer.

Hypercholesterolemia.—A. O. Wilensky (*Annals of Surgery,* November, 1923) in commenting on a case said he believed there were many factors which pointed clearly to the fact that the disturbance of metabolism leading to hypercholesterolemia was a fatigue phenomenon. Rest corresponded to the period of normal cholesterolemia. In times of superabundance, the release from the body of any excess of cholesterol beyond the quantity which the body, in a healthy state, could normally handle favored the recuperation of the fatigued function and restored the metabolic activity to a normal state. Such restoration to normal active conditions, i.e., the removal of excess quantities of cholesterol, could be accomplished by the drainage of bile, or by the curtailment, either partial or complete, of the replenishing supply of fat in the food source.

It was not to be assumed in any way that every case of pure hypercholesterolemia, in which the symptoms were referable to the disturbance of the cholesterol metabolism, should be treated by operation and relieved by the drainage of bile. Undoubtedly many of the disturbances were slight and were spontaneously corrected. Undoubtedly, too, many others could be relieved by proper dieting. Only a few seemed to be proper for surgical therapy, and, as knowledge increased, these, too, might grow less and less in number.

Chemical Blood Changes After Intestinal Obstruction.—R. L. Haden and T. G. Orr (*Surgery, Gynecology, and Obstetrics,* October, 1923), present the following conclusions:

1. Definite blood chemical changes are found in acute intestinal obstruction, manifested by a fall in the blood chlorides, often a rise in the carbon dioxide combining power of the plasma and a rise in the nonprotein nitrogen.
2. The fall in chlorides is considered the chief factor of this change and indicates that the chlorides may be utilized by the body as a protection against the toxic agent.
3. The administration of sodium chloride in larger doses than that supplied by physiological saline is indicated in acute intestinal obstruction as a means of directly combating the toxemia.
4. Since an alkalosis is frequently present in intestinal obstruction, alkalies should be administered with caution.
5. We have estimated that in the presence of the toxemia of intestinal obstruction sodium chloride at an initial dose of one gram to the kilogram of body weight should be administered. The blood and urine chlorides should be closely followed to estimate the subsequent quantity of sodium chloride needed to keep the chlorides at a normal level in the blood.

Pathology of the Acutely Inflamed Appendix.—In the twenty-seven cases examined by Leonard S. Didgeon and P. H. Mitchiner (*British Journal of Surgery,* April, 1924), the chief aerobic organisms isolated from the interior of the appendix in the first thirty hours of appendicitis were B. coli and streptococci. All except one streptococcus were nonhemolytic. The Bacillus welchii was present in four out of twenty-five acute cases. Bacillus coli were not obtained by blood culture, and the streptococci were found in only one case. In all cases recovery took place without complications. Bacillus coli infection of the urinary tract was present in three cases. Serological tests were made with the anticolon sera and with the isolated strains of Bacillus coli, with positive results in half the cases. Intestinal parasites were found in one of the acute cases, and in only one of the control cases of quiescent appendicitis (oxyuris). Appendix concretions consisted of fats, soaps, and

vegetable matter. Fats were demonstrated in the lumen, mucous lining, in the gland cells, in the lymph nodes of the appendix wall, and in the lymph glands draining the appendix in the quiescent cases. These findings suggest fat absorption from the lumen. In many of the acute cases the inflammatory process in the submucous and muscular coats was much more intense than the appearance of the mucosa led one to suspect. Evidence of chronic appendicitis was demonstrated in the wall of the appendix in some of the acute cases, although no previous history of appendicitis was obtained. In the chronic cases, and in the acute cases where evidence of previous inflammation existed in the appendix wall, the fibrosis involved the muscular coat, which was extensively disorganized. Spirochetes were found in two cases, and these patients had not been abroad.

Results of Operative Treatment of Ulcer Disease.—P. Clairmont (*Schweizerische medizinische Wochenschrift,* February 28, 1924), found that among a series of 1160 patients with ulcers of the stomach or duodenum subjected to different methods of surgical procedure the results were about the following: With the Eiselsberg method of exclusion of the pylorus too many ulcers of the jejunum appeared subsequently. The results with gastroenterostomy were good and bad in about the same proportions. The ultimate result depends considerably upon the nature of the disease rather than upon the technic of the operation selected. Resection shows the best results. The author's primary mortality in cases of resected duodenal ulcer amounted to six per cent.

Chronic Dyspepsias of Women.—A. J. Walton (*Lancet,* December 22, 1923) draws some tentative conclusions in regard to the cases of chronic dyspepsia in women that are due to prolapse of viscera caused by abnormally long mesenteries and the formation of membranes with an associated loss of muscular tone. He is in favor of administering medical treatment, which is to include physical exercises, combined with rest, general hygiene, dieting and medical treatment. Surgery should be considered only after such a course of treatment has proved to be ineffective and as an adjuvant to the medical treatment.

Use of the Duodenal Tube in the Treatment of Tapeworm.—Hans Schneider (*Wiener klinische Wochenschrift,* April 3, 1924) states that the advantages of the use of the duodenal tube are the avoidance of nausea and the effectiveness of smaller doses than those given by mouth. A cathartic is given in the evening and the next morning the duodenal tube is introduced on a fasting stomach. An infusion of kenna (five grams in fifty grams of water) is injected through the tube, and after fifteen minutes the same mixture plus two grams of extract of male fern and four grams of extract of pomegranate bark is also injected. The tapeworm is usually expelled within two hours. The sources of error are those of the passage of the duodenal tube, pyloric spasm, rolling up of the tube and gastroptosis.

Cholangitis Lenta.—E. Hedinger (*Schweizerische medizinische Wochenschrift,* April 3, 1924) reports five of his own cases of cholangitis lenta, under which term he includes cases of chronic, infectious cholangitis, without stones. The disease picture of this condition has many points in common with sepsis lenta. It is characterized by protracted periods of intermittent fever, icterus or subicterus, frequently an increase of bilirubin and biliary acids in the serum, bilirubin or urobilin and urobilinogen as well as biliary acids in the urine, painful swelling of the liver and a splenic tumor. In isolated cases there may be pronounced cirrhosis, resembling the Hanot type, with even a striking microscopical resemblance.

Congenital Pyloric Stenosis and the Rammstedt-Weber Operation.—Fedinski (*Monatsschrift für Kinderheilkunde,* April, 1924), asserts that there are two forms of congenital pyloric stenosis: 1, congenital hypertrophy of the pylorus, with almost exclusive or predominant involvement of the anatomical elements, and 2, the pure pylorospasm, induced exclusively through the nervous system. Various combinations of the two forms may exist. The particularly characteristic feature of the purely anatomical stenosis is the retention vomiting from the very beginning of the disease. The retention is favored by the previously occurring overdistension of the gastric wall. All the other symptoms may be observed in both forms of the disease. A demonstrable mass is undoubtedly a great aid in the diagnosis of pure stenosis, but unfortunately palpation is possible in severe emaciation. The Rammstedt-Weber operation is a great therapeutic aid and its indication varies from case to case. Surgical intervention is absolutely necessary in the cases of pure anatomical stenosis. In other cases, in which systematic therapy is futile and the case is becoming progressively worse, the operation is also justified, even in the purely nervous spasms. The operation should be undertaken, if the indication is clear, as soon as possible, while the child is still in possession of sufficient strength, and not *in extremis.*

Bilharzial Papillomatosis of the Rectum.—Robert V. Dolbey and Ibrahim Fahmy (*British Medical Journal,* March 6, 1924) state that the symptoms of rectal bilharziasis are constant tenesmus and the passage of blood and mucus. Treatment by tartar emetic destroys the living ova, but the papillomata and the consequent symptoms persist. The removal of the isolated papillomas by the knife or diathermy is unsuccessful, as they always recur. Injections of five per cent phenol, or other chemical agents, into the bases of the papillomata are equally unsuccessful. The only complete, thorough and permanent cure is obtained by the excision of the whole tube of rectal mucous membrane.

Hypertrophic Pyloric Stenosis.—Louis W. Sauer (*Archives of Pediatrics,* March, 1924), states that in the years that have passed since Ibrahim's classical monographs, much has been learned about the symptomatology, course and pathology of hypertrophic pyloric stenosis. The greatest achievements, however, have been in the domain of therapy. Most of the milder cases respond readily to dietary measures as thick cereal feedings, while the simple muscle-splitting operation of Rammstedt, when performed by experienced surgeons, has affected a great reduction in the mortality in the obstinate cases.

Laparoscopy.—Richard Zollikofer (*Schweizerische medizinische Wochenschrift,* March 13, 1924) states that laparoscopy is most serviceable in assuring the diagnosis of ascites, as in cases of cirrhosis cancerous metastases in the liver and general carcinomatosis, hypostatic congestion of the liver and perihepatitis. However, it has its limitations. It is harmless and easily borne only where a preliminary emptying of the ascitic fluid is possible, as otherwise the procedure might be dangerous. It is not applicable in changes in the gallbladder, appendix and adnexæ. The best medium for distension is carbon dioxide. Laparoscopy may be combined with radioscopy to advantage.

Essentials in the Treatment of Acute Abdominal Conditions.—George W. Crile (*Ohio State Medical Journal,* December 1, 1923), discusses such acute crises as are due to acute obstruction and the rupture or perforation of viscera with resultant severe hemorrhage or acute peritonitis. The type of patient to be considered here is the one who, on admission to the hospital, has a thready pulse and abdomen either distended and rigid, or filled with fluid probably blood. Such a patient is put to bed at once with a hypodermic injection of one quarter grain of morphine with one one hundred and fiftieth of atropine; he is immediately given large quantities of water (two to four thousand c.c.) by hypodermoclysis through two needles in the pectoral muscles; his blood is grouped at once and he is given a transfusion without being moved from his bed; he is immediately placed in a modified Fowler's position; large hot packs are applied to the abdomen and if he is vomiting he is given a gastric lavage. If there is improvement within the first hour, then a decompressing operation is done with the patient in his bed. The limited object of this decompression operation depends on the primary cause of the crisis, the imperative caution in each case is to stop the instant that objective is accomplished. Pursuant to this decompression, the patient's general management is in accordance with the following plan: 1, modified Fowler's position; 2, hot packs over the entire abdomen extending well down over the sides; 3, from two to four c.c. of water by hypodermoclysis every twenty-four hours; 4, transfusion of blood repeated if required; 5, except in gallbladder cases, morphine in repeated doses until the respiratory rate is down to ten to fourteen a minute; 6, maintenance of the utmost possible degree of negativity. Avoid all needless disturbance of the patient. Avoid any attempt to move the bowels in the acute stage of peritonitis. Avoid the continuance of morphine after the critical stage, but do not hesitate to give enough until the critical stage has passed.

Determination of Free Acid in the Gastric Juice by Titration of the Indicator.—H. Sahli (*Schweizerische medizinische Wochenschrift,* January 3, 1924) calls attention to the fact that the prevailing conception of the acidity values of the gastric juice have been revolutionized by the advances in physical chemistry, especially by the introduction of the concept of the hydrogen ion concentration. In general, the hydrogen ion concentration or actual acidity may be identified with the content of free hydrochloric acid in the gastric juice for all practical purposes and that of the combined acid with the idea of potential acidity. But the free acid cannot be determined by titration with alkalies because with them the free hydrogen ions are dissociated. In order to avoid this source of error, the author has elaborated a procedure which has given good results for years and has practically proved to be very accurate. A methyl violet solution diluted with distilled water shows a gradual deposit of violet over blue following green color on the addition of one tenth normal hydrochloric acid drop by drop. Ten c.c. of filtered gastric juice and the same amount of distilled water are mixed in two test tubes of the same size, each with 0.5 c.c. of a moderately concentrated and transparent solution of methyl violet. According to its content of free hydrogen ions, the gastric juice assumes a bluish to a greenish color. Then as much tenth normal hydrochloric acid is added from an accurately calibrated burette drop by drop to the pure methyl violet solution until the two fluids show the same depth of color. The hydrochloric acid content or hydrogen ion content of the methyl violet solution found at that moment (in this dilution the hydrochloric acid is as good as completely dissociated) corresponds to that of the gastric juice.

Chronic Intestinal Stasis.—W. Arbuthnot Lane (*British Medical Journal,* January 26, 1924) recommends a complete revolution in diet for the purpose of preventing the development of chronic intestinal stasis and its sequelæ, including cancer. In general, the diet should consist as much as possible of vegetable matter. It should be consumed largely in a raw state to avoid damage to the vitamines. Coarse indigestible material should be retained in order to increase the bulk of the intestinal contents, and the stimulating action on the reflexes. Food which may become offensive and poisonous when kept for a long time should be eliminated as much as possible. The consistency of the feces should be diminished and the frequency of the evacuations should be increased. Last, but not least, every possible endeavor should be made by mothers to suckle their infants for a sufficient length of time. As to the treatment of the existing condition apart from medical measures, such as the Curtis belt, paraffin of high viscosity, kaolin, and abdominal exercises, all operative measures on any portion of the gastrointestinal tract should be started by an examination of the last kink, and by the careful freeing of the bowel from its acquired attachment to the iliac fossa. The colon should then be examined in its entire length to make sure that no secondary constriction has developed, and particularly in the region of the splenic flexure. Any acquired band found controlling the lumen of the bowel should be carefully divided, and any raw surfaces deprived of peritoneum must be covered in accurately. An inflamed or controlling appendix or an ileal kink should be looked for and dealt with if present.

Principles of Treatment of Gastric Ulcer.—Charles Bolton (*British Medical Journal,* January 26, 1924), states that the two objects in view are: 1, to lessen the neuromuscular irritability of the stomach, more particularly of the pylorus, and thereby facilitate the emptying of the organ and restore the normal degree of duodenal regurgitation, and 2, to reduce the amount of gastric juice secreted. These two objects are accomplished by preliminary and subsequent treatment. In the preliminary treatment the patient is put to bed for six weeks so as to reduce the expenditure of energy and consequently the diet to a minimum and to reduce the work of the stomach. The food is then gradually increased to a full diet. The patient then gets up and is put on the subsequent treatment, masticating his food thoroughly and taking sufficient time and rest with his meals.

In the preliminary stage the food must be liquid or semisolid, finely divided, and free from irritants. An alkali is given during the later stages of digestion to neutralize the gastric contents. In the subsequent treatment the food must be such as to be easily disintegrated and peptonized, and free from irritants, such as decomposed fats, acids, and food accessories. In the preliminary treatment the foods are presented in the following order: milk, raw eggs, thin bread and butter, boiled eggs, cereals boiled in milk, pounded fish or chicken, mashed potato, sieved green vegetables, ordinary fish, chicken, mutton. The subsequent diet should contain an adequate amount of protein and carbohydrate, and as much fat as the patient likes in the form of butter, cream, boiled bacon and oil. Excess of fat may cause an aftersecretion of gastric juice. Rectal feeding should be resorted to only under two conditions: 1, bleeding from the stomach; 2, uncontrollable vomiting. Alkalies should be given, to replace the normal neutralization of the gastric contents by the regurgitation of the intestinal juices, about one and a half to two hours after each meal and also once or twice during the night if the patient is awake. The best alkalies are bismuth carbonate, calcium carbonate, magnesium oxide, and sodium bicardonate. Atropine has its uses, but takes a distinctly secondary place in the treatment. It relaxes the pyloric sphincter and permits of duodenal regurgitation. The only direct means of dealing with a chronic ulcer is to excise it; otherwise the aim of surgery is precisely the same as that of medicine—namely, 1, to facilitate the emptying of the stomach, and 2, to induce regurgitation of the intestinal fluids into the stomach, thereby neutralizing its contents in imitation of the normal duodenal regurgitation.

Examinations with the Duodenal Tube.—O. Winterstein (*Schweizerische medizinische Wochenschrift,* February 21, 1924) states that the duodenal tube in combination with instillations of magnesium sulphate is a very valuable diagnostic and therapeutic aid, but it frequently is of no avail. In acute cholecystitis, complete obstruction of the common bile duct, carcinoma of the biliary passages, cholangitis, typhoid fever, cholera, and in protozoal diseases the findings are valuable and interesting. The diagnosis of cholelithiasis and of chronic cholecystitis is rarely and only indefinitely established with this procedure. The diagnosis of duodenal ulcer is also uncertain. The duodenal tube is a valuable aid in pancreatic affections. It is especially valuable in cases where there is an absolute excretion of bile in abdominal differential diagnosis, where the duodenal, vesical and liver bile can be differentiated, when these contain no red or white blood cells, are sterile, or contain only an admixture of gastric flora. In such cases the biliary passages can be assumed to be healthy with great probability and they can be eliminated in the diagnosis. The same statement applies to the pancreas. The greatest value of the duodenal tube lies, therefore, in a process of exclusion. In some cases the duodenal siphonage gives valuable information, but this should always be subordinated to the history, the clinical findings, and the röntgenogram.

Bile in Metabolism.—E. Herzfeld and A. Haemmerli (*Schweizerische medizinische Wochenschrift,* February 7, 1924) recommend a technic for the determination of bilirubin, sufficiently accurate for clinical purposes. It consists of the mixture of a definite amount of the fluid to be examined (serum or urine) in increasing dilution with three drops of diluted Hammarsten reagent (mixture of concentrated nitric and hydrochloric acids). The dilution at which the bilirubin, converted into biliverdin, is still recognizable by the green discoloration is then read off. The bilirubin content is determined by a comparison with a dilution series of pure bilirubin. This technic is also applicable to hemolyzed serum, bloody body fluids, and extracts of organs, after the bilirubin has been changed by the addition of sodium bicarbonate into sodium bilirubin, which is soluble in alcohol, and after the albuminous bodies have been precipitated by absolute alcohol. The urobilin in urine, serum, and fecal suspensions is also determined on the same principle by the addition of an alcoholic zinc acetate solution. The diluting solution used is an alcoholic zinc acetate solution and the reading is made with an arc light or sunlight.

In the determination of biliary acids, the Pettenkofer test is modified to the extent that an eighty-four per cent. phosphoric acid solution is used in place of the concentrated sulphuric acid, in which test a deep blue to a bluish green color is developed in the presence of biliary acids. The solution used for comparison is made up by making a fresh solution of biliary acid alkalies from human bile. The delicacy of this reaction is marked.

End Results in Gastric Cancer.—After reviewing a large series of cases of gastric cancer, L. Schönbauer and Viktor Orator (*Wiener klinische Wochenschrift,* January 24, 1924) come to the conclusion that radical operations are usually impossible because patients come for treatment too late. In the majority of cases the extent of the involvement cannot be determined previous to operation and a large percentage of the cases in which a radical operation was done are, nevertheless, cured. Many a patient may be saved by early exploratory laparotomy, as is shown by the fact that twenty-seven per cent. of the cases in which resection was done were found radically cured on subsequent examination. Among the fatalities that were associated with operation, forty-four per cent. occurred after ether anesthesia, forty per cent. after local anesthesia, and sixteen per cent. when the operation was begun under local anesthesia followed by ether anesthesia. The indications for operation should be considerably extended, inasmuch as it was found that patients who were subjected to exploratory laparotomies lived six months longer and may have been improved by a radical interference. The author believes that a radical operative method, similar to that of the Wertheim operation for cancer of the uterus, which would include everything up to the hilum of the liver and the head of the pancreas, ought to be tried in cases of cancer of the stomach.

Bile Changes Caused by a Pressure Obstacle to Secretion; and Hydrohepatosis.—Philip D. McMaster, G. O. Broun, and Peyton Rous (*Journal of Experimental Medicine,* May, 1923), describe the changes occurring in the bile when obstruction hinders, but does not prevent, its flow through the ducts. With a progressively increasing obstruction, the fluid output lessened, and so even more markedly did that of cholesterol and of bilirubin. The final content of the stopped ducts was a colorless, limpid, "white bile," practically devoid of cholates and cholesterol. The authors discuss the liver changes following biliary obstruction, and show the essential likeness to the changes occurring under similar circumstances in glands in general and the kidney in particular. The major physiological factors concerned in the development of hydronephrosis and in the liver changes after biliary obstruction are identical. They therefore suggest the term hydrohepatosis as applied to the liver condition, not merely to designate, but to indicate the principles underlying its development. In clinical instances the likeness to hydronephrosis is often hidden because of the activity of the gallbladder to render the stasis bile dark and thick. There is then a concealed hydrohepatosis, differing merely by the character of the duct content, from the manifest hydrohepatosis, with "white bile," that is found when the gallbladder fails to act.

The Total Bile.—G. O. Broun, Philip D. McMaster, and Peyton Rous (*Journal of Experimental Medicine,* May, 1923), carried out their experiments with dogs permanently intubated for the collection of the total bile. In dogs fed the green bile or the liver tissue of herbivora, the bile later secreted frequently becomes green, changing from the previous yellow brown. The bile of dogs fed sheep bile that contains cholohematin comes to contain this pigment. When they are fed dog bile in quantity, a well marked increase in the output of bilirubin by the liver frequently follows. The authors believe that the increased bilirubin output after bile feeding is the result of an enterohepatic circulation.

Technic for the Bacteriological Diagnosis of Bacillary Dysentery.—L. O. Dutton (*Journal of Laboratory and Clinical Medicine,* April, 1924), presents the following routine procedure in order to arrive at a rapid bacteriological diagnosis of dysentery by a study of the feces. 1. Initial plating of feces, or preferably mucus from ulcers taken with a proctoscope and swab, on eosin methylene blue agar containing 0.5 per cent. each of lactose, saccharose, and glycerine. Reaction adjusted to pH 7.2. 2. Pick suspected colonies. Transplanting at least three to Krumwiede's triple sugar tubes for the purpose of checking the initial diagnosis and identifying the type. 3. At the time emulsify a mixture of several colonies in a drop of 1 to 30 polyvalent dysentery serum, mounted for a slide agglutination. Observe agglutination over a period of one hour. Partial agglutination at the end of that time is considered presumptive diagnosis of dysentery. 4. Transplant growth from the triple sugar tubes to dextrose, maltose, mannitol and sucrose with bromcresol purple as the indicator and observe acid formation forty-eight to seventy-two hours. The long period on the last step is to give time for the Flexner strains to ferment maltose. Even then the fermentation of this sugar is practically always slight. The reason for adding the saccharose and glycerine to the eosin methylene blue agar is to exclude from the probable dysentery colonies, those several intestinal bacteria that are nonlactose fermenting organisms, but that do ferment the added sugars. The fundamental point of the technic is the slide agglutination. A diagnosis can be made by this method at the end of twelve to fifteen hours.

Efficient Intestinal Antiseptic: Perchlorides of Mercury and Iron in Combination.—T. Stacey Wilson (*British Medical Journal,* February 16, 1924) found that fifteen minims each of liquor hydrargyri perchloridi and of tinctura ferri perchloridi, combined with a little glycerine and chloroform water, give good results in enteric fever, colitis, and dysentery, and in Addison's anemia. However, certain precautions must be observed: 1. A combination with albumin or alkalies will destroy the antiseptic value of this mixture, and it must therefore be given when the stomach is empty, and must also be combined with some drug which has more powerful affinities for alkalies (such as ferric perchloride) in order to prevent its neutralization by the alkalies of the duodenum. Where there is retention of the gastric contents owing to atonic dyspepsia or pyloric spasm its use is contraindicated owing to the certainty of the mercurial salt being converted into albuminate. 2. As the two perchlorides tend to irritate the gastric mucous membrane in some cases, the remedy is best given in circumstances which ensure as rapid a passage into the duodenum as possible. This object is best attained by giving the drugs fifteen or twenty minutes before meal times when the stomach is already becoming active in preparation for the reception of a meal. In acute cases, when definite meals are not given, the remedy can be given every four hours, and is usually quite well tolerated. As the continued use of this drug (iron) is sometimes followed by a loss of weight, patients who are taking it regularly should be carefully watched.

Anomalies of Intestinal Rotation.—N. M. Dott (*British Journal of Surgery,* October, 1923) presents the following conclusions:

1. The three stages of normal embryonic intestinal rotation are described. In the second stage the essential disposition of the intestines is attained.

2. Derangements of intestinal rotation are described and arranged under three heads: a, The first stage of rotation; b, the second stage (subdivided into three groups, nonrotation, reversed rotation, and malrotation); c, the third stage.

3. It is suggested that the cause of anomalies of the second stage is variation in size of the embryonic umbilical orifice.

4. The pathological consequences of anomalies of the second stage of intestinal rotation are described, and their incidence and relative frequency are estimated from the literature. Failure of sufficient intestinal fixation and consequent volvulus is found to be the typical lesion. Volvulus from this cause has its highest incidence in the first few days of life, and at this time a very extensive volvulus is characteristic. Volvulus of the ileocecal segment is the typical lesion in later life.

5. Three cases of volvulus due to anomalies of intestinal rotation are reported: a, Reversed rotation and volvulus of the ileocecal segment in an old man; b, nonrotation and volvulus of the entire midgut segment in a newborn child; c, malrotation and volvulus of the entire small intestine in a newborn child.

6. Three similar cases in the literature are briefly quoted.

7. Some special points in the surgical pathology of extensive volvulus in infants are considered.

8. The diagnosis of anomalies of intestinal rotation is considered: a, from the standpoint of abnormally situated appendicitis; b, from the point of view of recognition on the operating table; c, in cases of secondary volvulus, especially in the newborn.

9. An operative treatment by reduction and fixation is suggested for cases of extensive volvulus in the newborn, based upon an examination of two specimens of the condition.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, OCTOBER 1, 1924

Medicolegal Notes.

PROMISE TO PAY BEFORE MEDICAL SERVICES RENDERED TO THIRD PERSON.

The Missouri Court of Appeals holds, Girdner v. Myers, 259 S. W. 150, that the rule that if the person performing services knows they are not for the benefit of the person making the request, and that he is under no legal obligation to pay therefor, he cannot predicate a claim against him unless he expressly promised to pay for them before the services were rendered, has no application to a case where the patient was taken to a hospital and the first act of emergency treatment given him occurred before the contract, this being infinitesimal compared to the rest of the services, and there being room for the belief that the defendant was pecuniarily interested in having the patient cared for and wanted that done.

IMMUNITY OF CHARITABLE HOSPITAL FROM LIABILITY TO PAYING PATIENT

Following Schloendorff v. N. Y. Hospital, 211 N. Y. 125, to the effect that charitable hospitals are not liable (except, perhaps, for failure to exercise care in selection) for the negligence of their physicians, surgeons and nurses in the treatment of patients, in the absence of a special contract or waiver by the institution of its legal immunity, the New York Supreme Court, Queens County, holds, Wilson v. New York Homeopathic Medical College and Flower Hospital, 204 N. Y. Supp. 175, that the fact that a patient, burned by the negligent application of hot water bottles by a nurse, paid $28 per week for room, board and services of nurses did not bar the hospital from setting up the defense of exemption, where the payment was merely a contribution, not sufficient to more than pay for the actual expense of the care of plaintiff.

ILLINOIS MEDICAL PRACTICE ACT

The Illinois Supreme Court holds, People v. Schaeffer, 219 Ill. 574, 142 N. E. 248, that the Illinois Medical Practice Act, 1890, discriminates against osteopathic physicians in favor of the graduates of the medical schools because it requires the graduate of an osteopathic school to continue his college education by becoming a graduate of a medical school before being examined for license to practice osteopathy and surgery; because he is required to study therapeutics of the allopathic or other medical schools, while a graduate of an allopathic school is not required to study osteopathic therapeutics; and if he attends a medical college he will be required to repeat studies he has passed through in his own school.

There is no provision in the act whereby a graduate of a college of osteopathy may be licensed to practice osteopathy and surgery, including midwifery, or whereby he may be examined to practice the same, unless he is also a graduate of one of the medical schools.

The statute is therefore held to tend to deprive the osteopaths of their constitutional right to practice surgery and to be void as to such physicians so deprived.

In People v. Graham, 311 Ill. 92; 142 N. E. 449, the same question was presented as in the Schaeffer case. Here the court said: "The authority of the Legislature, under the police power, to regulate and fix the qualifications of persons who practice medicine and surgery is not and cannot be denied. The Legislature may make such requirements as will qualify all classes of persons treating human ailments to thoroughly understand their profession and protect the public against those who are inefficient and unworthy. In the enactment of statutes for that purpose the Legislature may provide for classes, so long as the classification is general and bears a reasonable relation to the purpose sought to be accomplished; but any act of the Legislature which is merely arbitrary or discriminatory, where there is no substantial difference between the classes, and which abridges privileges of citizens or grants special privileges to classes, is in violation of constitutional rights."

"There was no provision of the act under which a license to practice surgery could have been given to the defendant. The right to such a license was limited to a class to which he did not belong, and as the law does not require a useless act to secure a right, the defendant was not called upon to apply for a license which could not be granted."

ACCIDENT CAUSING HERNIA

Where there was no testimony showing an accident except that of the plaintiff that he felt a sharp pain while operating a printing press, and the answers to hypothetical questions not based upon the facts, and no evidence that plaintiff suffered any strain, or slipped, fell or received any blow, or that the operation of the press was unusual or difficult, the New York Appellate Division, Sanders v. Faller, 205 N. Y. Supp. 285, held that no accident had been proved, and reversed an award for hernia. The court said that in the cases cited by the claimant there was either "heavy lifting," "a fall," "slipping with heavy weight," "overreaching," or "overbalancing," or some other form of a blow showing the causal relation.

PREMATURE DECISION AS TO COMPENSATION

The New York Appellate Division, in Levine v. General Electric Co., 204 N. Y. Supp. 777, holds that a series of findings and a statement that, if the claimant desires an operation, he will be entitled to compensation for the period of disability resulting therefrom, is not an award under the Workmen's Compensation Law imposing any liability on the employer. Should the time arrive when claimant is entitled to an award, the board may so determine.

VERIFIED REPORT OF PHYSICIAN REQUIRED IN NEW YORK

An unverified report by a physician, stating that the employee is dead and that his death was the result of traumatic pneumonia is not legal evidence in a workmen's compensation case under section 21, subd. 5, of the New York statute, which provides that "verified medical and surgical reports" shall be prima facie evidence of the facts therein stated in such cases. Paola v. Porter Bros. (N. Y. App. Div.) 205 N. Y. Supp. 281.

TAXATION OF HOSPITALS

The Tennessee Supreme Court holds, City of Knoxville v. Ft. Sanders Hospital, 257 S. W. 408, that a hospital maintained by physicians, having 65 beds, and being equipped with a research laboratory and a modern x ray outfit, and conducting a school for nurses, having an average of seven or eight charity patients, the remainder being charged substantial prices for their accommodation, was not exempt from taxation of its property under Tennessee Const., art. 2, §28, and Acts 1907, c. 602, exempting property belonging to "charitable, scientific, or educational institutions."

ACCIDENTAL DEATH WITHIN ACCIDENT POLICY

The Indiana Appellate Court holds, Hoosier Casualty Co. v. Royster, 142 N. E. 18, that death caused by the puncture by deceased of the lower bowel in using a tube for the introduction of medicine in treating hemorrhoids was not an accidental death occurring through external, violent and accidental means within an accident insurance policy.

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Miscellany.

Extraprofessional Activities of Physicians.—Dr. W. Moore Thompson in the *Illinois Medical Journal* for July, August, and October, 1923, outlines the work of medical men outside of their profession. Many of these men studied medicine but never followed the profession seriously. Among these were Goethe, Ibsen, and Schiller, the last of whom was for a time a medical officer in the army. Among physicians who were in active practice and at the same time litterateurs were Sir Richard Blackmore, Arthur Johnston, Mark Akenside, John Phillips, George Crabbe, Rabelais, Smollett, Oliver Goldsmith, Sir Thomas Browne, Dr. John Brown, Oliver Wendell Holmes, S. Weir Mitchell, and Conan Doyle. The famous "Delta" of *Blackwood's Magazine* was Dr. David Macbeth Muir, of Edinburgh; others who wrote were Thomas Gordon Hake, Drummond of Canada, Edward W. Watson of Philadelphia, James B. Naylor of Columbus, Ohio, and Charles Alexander Eastman, of Boston. The present poet laureate of England, Robert Bridges, was for twenty-five years a successful practitioner. Eugene Sue was a surgeon in the French navy; others who have done notable literary work together with their medical practice were Charles Lever, Samuel Warren, and J. G. Holland, founder and first editor of *Scribner's*, and later on the editorial staff of the *Century*.

Among physicians who have achieved fame as explorers were Charcot, Elisha Kent Kane, and Hayes. Among physician politicians and statesmen have been Clemenceau; Jameson of South Africa; Sun Yat Sen, president of South China; Sir Charles Tupper, who was premier of Canada; and General Leonard Wood.—*Annals of American History.*

Smoke, Fog, and Health.—It has been said that the fogs of England are a byword among the nations. This may be true, but the fact remains that the atmosphere is polluted by smoke in industrial centres in other parts of the world, although the domestic chimney is perhaps a more predominating source of smoke in England than elsewhere. It is because of this smoke that a mist—such as naturally occurs in rural districts—is transformed over the city into a thick, choking cloud, well named "pea soup" in many instances. It is difficult to estimate exactly the damage to health that smoke pollution produces, but the occurrence of dense fogs in England towards the latter part of a year enables some comparisons to be made. During the week December 1 to 8, 1923, fog was more or less prevalent in London. The official figures for deaths from certain diseases of the respiratory system (bronchitis and bronchopneumonia) showed a sudden increase for this period. Thus for a week in the middle of November the number of deaths from these two causes was 106, while during the week in question this number had increased to 303.

A campaign for clean food and pure water has the support of all persons who are working for the improvement of health for the nations of the world. It has been pointed out that a man consumes daily two to three pounds of food, four to five pounds of water and forty pounds of air. Yet people may everywhere pollute the atmosphere with comparative impunity. (It is true that there are certain restrictions in England concerning industrial chimneys.) In the winter months at least seven eighths of the sun's power are shut off by smoke from the centre of London. The apparatus which measures this records only the heat rays of the sun, but the ultraviolet rays which have been shown to be so important in the treatment of rickets and tuberculosis are shut off to an even greater extent.

The presence of coal smoke with its irritant particles is therefore a positive danger in the serious effects produced upon the respiratory organs. It robs city dwellers of the curative rays of the sun, and by the moral effect of gloom it increases depression and fatigue, and lowers the body's power of resistance.

If smoke pollution is to be abolished, two main lines of attack are open. The one is the production of a smokeless fuel which shall be both within the financial reach of the poor and economically of value to the manufacturer. The other is in evolving electrical heating and lighting power which shall be equally available for all.

Smoke is a definite enemy of health, and if, as is the opinion of experts, pollution of the atmosphere can be prevented, then all health workers must see to it that they take their share in hastening the solution of this vital problem.—(*The World's Health*, July, 1924.)

Trachoma.—This dread eye disease of the Orient and most ancient of recognized human ills is seen as a world menace by Dr. R. T. Uhls, of Kansas City, noted American eye specialist, who has returned to this country after an exhaustive survey of the disease throughout the Levant in behalf of the Near East Relief.

Dr. Uhls, after three years of service as eye specialist of the relief organization, began his final survey six months ago, travelling from Armenia across Persia and Turkestan to Afghanistan and the Chinese border. Because of his success in combating the disease in Armenia, the Moscow Government, which controls most of the territory in which his researches were conducted, opened public health records to him and ordered the cooperation of native physicians.

Infection runs higher than fifty per cent. of the total population in all areas visited, according to Dr. Uhls, with a very large proportion of blindness as a direct result of the disease. The demoralization of native health services since the war and the tremendous lowering in the standards of living caused by invasion and periods of famine are chiefly responsible for the marked increase in trachoma.

"Relief measures also are contributing indirectly to the fight against trachoma in Armenia by the improved methods of sanitation which Americans have introduced and to the increased interest in healthier living conditions which they have awakened in the people," Dr. Uhls said. "With the cooperation of the Government, a public health service has been organized that is carrying on an effective educational campaign among the peasants in the outlying districts and the more ignorant people in the slums of the cities."

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Mortality Record of the First Six Months of 1924.—The first half of 1924 has probably registered a lower deathrate than was ever experienced for the first six months of any year in the history of the United States and Canada. This is indicated by the mortality records of the more than fifteen million Industrial policyholders of the Metropolitan Life Insurance Company, published in the company's statistical bulletin for August.

Among the most gratifying items in the record for the half year are the declines in the mortality from the diseases which are of interest in public health and insurance medicine. The typhoid fever rate is still falling and there is promise that a new minimum will be registered in 1924. Diphtheria mortality in the Industrial population has been running lower than ever before. Scarlet fever and whooping cough, it is true, show practically the same death rates as for the corresponding period of last year. There has been no general prevalence of epidemic influenza thus far. The mortality from lobar pneumonia decreased markedly among the white policyholders and slightly among the colored. Bronchial pneumonia, it is true, caused more deaths than during the same period of last year; but this, again, was due to the relatively high coverage of infants.

An encouraging item is the further decline among white women in the mortality from diseases incidental to pregnancy and childbirth and, more particularly, from puerperal septicemia. Unfortunately, this improvement did not obtain for colored women.

Attention has been directed in several recent issues of the *Bulletin* to the decline in the diabetes rate which began coincident with the increasing use of insulin in 1923, and which followed an uninterrupted rise during the preceding four years. The rates for the first six months of 1924 supply still later data and even more convincing evidence of the extent of the fall in the diabetes death rate, which amounts to 21.6 per cent. among the white policyholders and to more than ten per cent. among the colored.

Little encouragement is to be derived from the cancer mortality figure. While a slight decline was recorded among the whites the death rate increased to an equal extent among the colored. The combined rate, however, is a little lower than that in evidence at this time last year.

The number of deaths recorded from alcoholism was 236 with a death rate of 3.0 per 100,000. This may be compared with 241 deaths during the first six months of last year and a rate of 3.3. It is still too early to determine whether the peak in the rise of the alcoholism death rate, since 1920, has been reached. Unless, however, an unexpectedly large number of deaths are recorded during the final six months there will be no rise in the rate this year as compared with last.

Deaths from acute poisoning by wood and denatured alcohol appear to be decreasing in the Industrial population. Only eight were recorded during the first six months of this year as compared with twenty for the same period of 1923. Cirrhosis of the liver, which is closely associated with alcoholism, caused 475 deaths, as compared with 435 deaths during the first half of last year. The death rates were identical, however, being 6.0 per 100,000 for each year.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE RELUCTANT LOVER. By Stephen McKenna. Boston: Little, Brown and Company, 1924. Pp. 285.

MIND AND MEDICINE. By Thomas W. Salmon, M.D. New York: Columbia University Press, 1924. Pp. 33.

A MEMOIR OF WILLIAM AND JOHN HUNTER. By George C. Peachey. Plymouth: William Brendon and Son, Ltd., 1924. Pp. 313.

LADY INTO FOX. By David Garnett. Illustrated with Wood Engravings by R. A. Garnett. New York: Alfred A. Knopf, 1924. Pp. 97.

MEDICAL CLINICS OF NORTH AMERICA. New York Number. Philadelphia and London: W. B. Saunders Company, July, 1924. Pp. 426.

ARIEL. The Life of Shelley. By André Maurois. Translated by Ella D'Arcy. New York: D. Appleton and Company, 1924. Pp. 336.

A MAN IN THE ZOO. By David Garnett. Illustrated with Wood Engravings by R. A. Garnett. New York: Alfred A. Knopf, 1924. Pp. 119.

THE NATURE OF LOVE. By Emmanuel Berl. Authorized Translation by Fred Rothwell. New York: The MacMillan Company, 1924. Pp. 278.

THE EVOLUTION OF MAN. Essays. By G. Elliot Smith, M.A., M.D., Litt. D., D. Sc., F.R.C.P., F.R.S. New York: Oxford University Press, 1924. Pp. 159.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Volume XLIX. New York: Rockefeller Institute for Medical Research, 1924. Pp. 603.

RELIGION AND THE NEW PSYCHOLOGY. And Other Addresses. By N. Bishop Harman, M.A., M.B., B. Ch. (Cantab.), F.R.C.S. London: The Lindsey Press, 1924. Pp. 86.

THE PROSPECTIVE MOTHER. A Handbook for Women During Pregnancy. Second Edition. By J. Morris Slemons. New York and London: D. Appleton and Company, 1924. Pp. 343.

RACE HYGIENE AND HEREDITY. By Hermann W. Siemens, M.D. Translated and Edited by Lewellys F. Barker, M.D. Illustrated. New York and London: D. Appleton and Company, 1924. Pp. 178.

KEEPING UP WITH SCIENCE. Notes on Recent Progress in the Various Sciences for Unscientific Readers. Edited by Edwin E. Slosson, M.S., Ph.D. New York: Harcourt Brace and Company, 1924. Pp. 355.

ARTIFICIAL LIMBS. Appliances for the Disabled. By Dr. Florent Martin. International Labor Office, Studies and Reports, Series E (Disabled Men) No. 5. Geneva: International Labor Office, 1924. Pp. 299.

THE DIAGNOSIS OF NERVOUS DISEASES. By Sir James Purves-Stewart, K.C.M.G., C.B., M.D., Edin., F.R.C.P. Sixth edition, revised. New York: E. B. Treat and Company; London: Edward Arnold and Company, 1924. Pp. 648.

OLD NEW YORK: False Dawn—The 'Forties; The Old Maid—The 'Fifties; The Spark—The 'Sixties; New Year's Day—The 'Seventies. By Edith Wharton. New York and London: D. Appleton and Company, 1924. Pp. 143-191-109-160.

MALADIES DES NERES PERIPHERIQUES ET DU SYMPATHIQUE. Par Pitres, vaillard, et Laignel-Lavastine. Nouveau Traite de Medicine et de Therapeutique, XXXVI. Avec 56 Figures intercalees dans le texte. Paris: J. B. Bailliere et Fils, 1924. Pp. 857.

DIE KLINIK DER BÖSARTIGEN GESCHWÜLSTE. In drei Bänden. Herausgegeben von Geh. Rat Prof. Dr. P. Zweifel und Geh. Med.-Rat Prof. Dr. E. Payr. 1. Band. Allgemeine Geschwulstlehre, Haut, Nervensystem, Kopf und Hals. Mit 204 Textabbildungen und 33 farbigen Tafeln. Leipzig: S. Hirzel, 1924. Pp. 860.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 8 NEW YORK, WEDNESDAY, OCTOBER 15, 1924 WHOLE No. 2291

Teratoid Tumors and Teratology

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Somerset, England

The weakest spot in the chain of knowledge relating to tumors is the link which is called teratoid.

It may be said that teratoid tumors are to tumor science in general what the *residua* of chemical processes are to chemical science in general; that is to say, a store of potential discoveries and unappreciated facts of great value and significance for scientific and practical purposes. Of all the methods of scientific investigation this is one of the most fertile in unexpected results, since it often brings to light relationships that would otherwise have escaped notice, of which our study of the subject has revealed many examples. For instance, the great complexity of the morphological basis of these tumors—malignant and nonmalignant—shows that their properties concentre in morphological complexes, in which derivatives of all the germinal layers commonly participate, so that the process of tumor formation, from this viewpoint, can hardly be regarded otherwise than as a *morbid variety of growth.* It is just the same with the secondary and recurrent manifestations of malignant teratoid tumors, which commonly reproduce the morphological complex of the primary tumor, rather than any single tissue element.

It seems likely then that in this confused heap of miscellaneous teratoid items, the result of haphazard accretions from many and various sources during the last century or so, the keystone of the arch of tumor science in general may be found.

At any rate, these teratoid tumors present special features of a remarkable kind—genetical, histological and biological—which ought not to be ignored, as hitherto, when the subject of tumor formation in general is under consideration.

But, profitably to explore these mazes, a sound method—based on clear perception of the natural interrelations of the constituent parts of the problem to one another and to the *ensemble* of the subject—is essential; for otherwise, owing to the multiplicity of incongruous details, we should soon be engulfed in the prevailing confusion. This we claim to have provided by our discovery of the natural affinities of teratoid tumors, and their grouping in accordance herewith, which gives the much needed unity of conception. It is time to study these immense stores of *disjecta membra,* to combine and correlate the details and to consider the general aspects of the subject, as Aristotle has it, "with a head on," so that from this new viewpoint a higher plane of progress may be attained.

In pursuing our investigation in this spirit, and having examined everything of importance relating thereto, so far as our knowledge goes, we hope thus to open up and establish a new branch of science wherein of course much still remains to be done.

With these preliminary remarks, we enter on the systematic study of teratoid tumors without any prepossessions, except as to their blastogenic origin, which we need not here pause to justify.

The term teratoid is so ambiguously employed that we may as well state the sense in which we use it. For us the portent indicated by τέρας, is a parasitic fetus or some derivative thereof, however imperfect.

CLASSIFICATION

A teratoid tumor is therefore either an included parasitic fetus, some part or parts thereof, or a growth derived therefrom. For the sake of convenience the following varieties may be discriminated:

1. The *teratoma,* which comprises an easily recognizable fetus or fetal parts, more or less included in the tissues of the autosite.

2. The *teratoid,* in the strict sense, which consists of a medley of various included fetal structures chaotically disposed. Derivatives of all the germinal layers are generally comprised therein, but in degraded specimens some of these may lack.

3. The *dermoid,* a clinical term, applied to certain teratoid growths in which tegumentary structures are predominant. Heterotopic tegumentary cysts otherwise derived may be discriminated as cutis cysts.

Teratoids then, as the etymology implies, are derivatives of more or less imperfect fetal formations parasitically implanted in the autosite. Their origin can be traced to some product of asymmetrical diplogenesis or rarely to some higher variety of polygenesis. Thus the origin of these growths goes back to the earliest phases of developmental exegesis. This being so, as our studies of all the types show, it follows that their genesis is but a phase of teratogenesis.

It accords with the foregoing that teratologists have always had a better understanding of the nature of teratoid growths than pathological anatom-

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ists, who have based their conclusions too exclusively on histological details.

Thus, I. G. St. Hilaire (1)—the father of teratology—long ago wrote of ovarian teratoids: *"Comparez le parasite vivant isolément dans l'ovaire avec l'individu parasite d'un hypognathe, et vous trouverez en effet que la même déscription peut convenir à l'un et à l'autre."*

If pathological anatomists are only now beginning to realize the correctness of this conclusion for all the local varieties of teratoid growths, we must ascribe this backwardness to the neglect of teratological studies which has characterized the last half century, for such are the interrelations of the biological sciences that none of them can be brought to perfection while their congeners are neglected.

Therefore if progress is to be made in these matters, to pathological anatomy we must join teratology, which is as it were its prolongation.

However different in their several degrees, diplogenetic formations nevertheless constitute a continuous series; so that between such highly evolved types as conjoined twins and such incomplete manifestations as slight doubling of either end of the longitudinal axis, every intermediate gradation is represented. Or, otherwise stated, as in Vrolik's terms: "There can be traced such degrees and modes of deviation from singleness as pass, without one abrupt step, from the addition of a single ill developed limb to the nearly complete formation of two distinct beings."

NATURE OF TERATOID GROWTHS

In like manner, we have traced similar genetic connection between the parasitic forms of diplogenesis, and all the chief types of teratoid growths.

A necessary consequence of the foregoing is that all teratoid growths are of the same nature, genetically and morphologically, and such differences as they manifest *inter se* are of degree and not of kind. Teratoids of the sexual glands, for example, are not specifically different from their intraabdominal congeners of the mesenteric vicinity, as Wilms maintains.

By seeking out and coordinating the many miscellaneous items relating to teratoids in accordance with the foregoing considerations, we have thus succeeded in reconstructing the series for each type; and so have been enabled to determine their natural affinities—the only sure foundation on which to build. We can thus present, for the first time, a uniform scientific basis for the study of all teratoid tumors.

LOCATION OF TERATOID GROWTHS

It may be gathered from the topographical study of teratoids that these growths concentre in certain definite localities. Large numbers are found in the sacrococcygeal region, especially posteriorly and inferiorly.

Directly continuous with the foregoing is a group which occupies the dorsal part of the pelvis, in front of the sacrum and coccyx.

In many instances the same teratoid is found in both presacrococcygeal and postsacrococcygeal sites.

Next we come to the very numerous *intraabdominal* teratoids, which connect with the dorsal pelvic group. It is with these intraabdominal examples that the teratoids of the *sexual glands* must be included. All the members of this intraabdominal group, including those of the sexual glands, concentre in the vicinity of the primitive mesentery, and they are always extraperitoneal. Detailed study of these linked groups of teratoids points unmistakably to the conclusion that they all originate in the vicinity of the posterior or lower end of the nascent body axis.

As the evolving axis elongates and descends, some of these primitive teratoid germs are carried down therewith into the dorsal part of the pelvis, and others into the sacrococcygeal region. Those remaining behind foregather in the mesenteric region. Thus, any part of the tract of this *descensus,* from the region of the primitive mesentery to the sacrococcygeal region, may harbor these teratoid germs.

ORIGIN OF TERATOID GROWTHS

As to the particular types of polygenesis whence these local teratoids originate, thorough exploration of the subject has convinced us that these may be reduced to two, viz., the pygopagic and the dipygic (*duplicitas posterior*). The teratoids of this group form a numerous company.

Here mention may be made of another small group of teratoids which also originate in the vicinity of the lower end of the body axis, to wit, those found in the *ventral* part of the pelvis, which concentre in the pubic vicinity. These are derivable from ischiopagic and dipygic diplogenesis, etc., as our series of instances show.

Of the remaining teratoids, most originate about the anterior end of the nascent body axis.

Of these, two chief allied groups may be discriminated—*the cephalic* and the *cervical.*

With regard to the cephalic teratoids, most concentre about the basis cranii, whether within or without the cranium or in intermediate positions.

These are derivable from parasitic forms of *duplicitas anterior,* or from similar forms of the "Janus type" of diplogenesis, as we have found by adducing the intermediate links of the chain of connexion.

Another considerable group of cephalic teratoids concentres about the buccal and facial regions, and these are similarly derivable from the foregoing.

Yet other cephalic teratoids, less numerous than either of the groups mentioned, are met with; which are derivable, as our serial studies show, by adducing the intermediate links, from craniopagic diplogenesis. Of these we discriminate frontal, parietal and occipital varieties.

There is analogy between these craniopagic types of the anterior end of the body axis, and the ischiopagic types of the posterior end of the body axis.

As for the cervical teratoids—which occur in median as well as lateral sites: at upper, lower, as well as at intermediate levels—most of these, as our investigations show, are derivable from parasitic forms of duplicitas anterior, left behind by the elongation of the nascent body axis; and others are traceable to asymmetrical forms of the "Janus type" of diplogenesis.

Finally, we come to the *thoracic* teratoids, which are found without as well as within the thorax, and even in intermediate positions.

Many of these we have traced to the same forms of diplogenesis as their cervical congeners, of which

they may be regarded as an extension. This specially applies to those teratoids which concentre at the upper part of the thorax, about the base of the heart and its pericardial sac.

The remaining thoracic teratoids, as our researches show, are mostly derived from parasitic forms of sternopagic and xiphopagic duplicity.

We have traced the stages of this genetic connection of the local groups of teratoids, with the above mentioned types of diplogenesis, by adducing the intermediate links; but to give the details would require a special treatise, which we hope will see the light, when the economics of production are more favorable.

For each group, the chief rallying points of our rationale are as follows:

1. Conjoined twins or symmetrical duplicitas; 2. externally attached parasites; 3. teratomatous or included parasites; 4. teratoid and dermoid tumors.

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Auscultatory Percussion and Palpation

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Philadelphia

The art of percussion over a solid viscus, while ausculting over such organ by aid of a small stethoscope, is by no means new, and was employed by Clark in outlining the heart as early as 1840. This method was first practised in the Philadelphia General Hospital (Blockley) in 1896 by the late Dr. Frederick A. Packard, then visiting physician to the Philadelphia and Pennsylvania Hospitals. Serving as Packard's resident physician, I was invited to work with him in perfecting this method.

Neither this method as used in 1896 nor any of its modifications now in vogue for the detection of the calibre of the intestine (size of cecum, colon, stomach and displacement of such viscera) were ever suggested by Packard. In fact auscultatory percussion was then thought to be valueless in examinations of the lungs and other air containing viscera.

Measurements of the heart were obtained by auscultatory percussion by such clinicians as Alonzo Clark and George P. Cammann as early as 1840, and Stengel described accurately Compte's method of stroking the skin in 1897. Stengel in his article stated that he had been using auscultatory percussion in the outlining of solid viscera for a period of five years (four years before Packard's work), and regarded it as a most valuable method. In referring to Compte's method Stengel gave the following: "The method of Compte's is therefore, I believe, wholly useless." Stengel further described, at length, the difficulties in the employment of auscultatory percussion for outlining the stomach, and hollow abdominal viscera, as he found it in 1897. It might be well to add that practically all these objectionable features have been overcome, and today we find auscultatory percussion and palpation the most reliable known methods for outlining and detecting abnormal conditions of the air containing viscera.

The late D. D. Stewart, in discussing the paper of Stengel in 1897, made mention of the fact that he had found auscultatory percussion the most reliable method of determining the lower margin of the stomach. I find no record of an attempt to outline the hollow viscera by means of the x ray until 1900 to 1902, fully three years after Stewart's observations, when it was found possible to give an imperfect outline of the stomach. Harbersohn described in 1902 a technic through which he was able to define the boundaries between the upper and lower lobes of the lungs by auscultatory percussion.

Andrew H. Smith places the bell of a binoral stethoscope in the patient's month and when the lips were closed tightly and the nostrils closed he conducted percussion over the lung, and obtained data of unquestionable value. Probably the earliest article referable to auscultatory percussion in pulmonary disease was published by Demissy in 1876, *Auscultatory Pletessimetrique.*

In 1897 and 1898 the writer began to modify Packard's original technic, and used the tuning fork, and different makes of stethoscopes for the recognition of pathological states of the air containing viscera. My resident physician, Alexander, in 1917 designed a special stethoscope, with two parchment diaphragms for use in the recognition of early disease of the apices of the lungs.

Auscultatory palpation (Compte's method), was employed first by me in 1897 and within the course of two years it was perfected to a degree which gave this combined physical method (stroking the skin and ausculting) a prominent position in the outlining of the stomach, colon and consolidated areas of the lung. My first thrilling experience came in 1898 when by the use of auscultatory palpation (stroking the skin), I outlined the pericardium, in a case of pneumopyopericardium. Results were confirmed by autopsy at the Philadelphia General Hospital.

I have found that the various modifications of auscultatory percussion and auscultatory palpation, when properly employed, give data regarding the size of both solid and air containing viscera not equalled in clinical value by any other known diagnostic method; and only approximated by röntgen ray findings. In a study of the lungs, auscultatory percussion and auscultatory palpation provide data far more reliable than röntgenographic records.

In 1914 Anders and Boston (*Diagnosis*) gave liberal consideration of this physical method, e. g., "This physical method combines percussion with auscultation by means of the stethoscope, and is by far the most practical method for the outlining of various diseased portions of the lung, and for ascertaining the size of solid viscera."

Fig. 1

Fig. 2

Fig. 1.—Cardiac diameters. Transverse leading from beyond the right border of the sternum to the left axilla. Right oblique leading from the uppermost area of cardiac dullness beneath the sternum to the apex. Left oblique leading from the superior left border of the heart to the ensiform. The right oblique diameter is increased most in left ventricular hyperthrophy. The left oblique and transverse diameters are increased in right sided dilatation. The diameters become of approximately equal length in acute cardiac dilatation. Percuss from below, the apex upward along the right oblique cardiac diameter to determine the lower extent of the apex. The stethoscope may be placed over any other portion of the heart, and percussion applied to determine heart boundary at any selected point.

Fig. 2.—Stroking the skin with a delicate file at the beginning of the right oblique cardiac diameter to determine this border of the heart. The left oblique extending from the left shoulder to the ensiform cartilage and the transverse diameter leading from the right border of the sternum through the nipple to the left axilla are also shown. Note the triangular area at the centre of the precordium (absolute dullness).

Fig. 3

Fig. 4

Fig. 3.—The area where the heart apparently overlaps the liver (accurate determination of hepatic and cardiac dullness). Stethoscope bell may be placed over any portion of the heart. Start percussion over the liver, and avoid bony structures, until the lower border of the heart is approached. By placing the stethoscope bell over any remote portion of the liver, percussion may be made across the body of the heart to determine the upper border of the liver at this point.

Fig. 4.—The tuning fork, while vibrating, is first placed over the skin of the chest, above the nipple, then advance downward on the nipple line in the same manner as though percussing. The stethoscope should be placed over some portion of the liver. When the tuning fork reaches the upper margin of the liver a marked change in sound is detected. The tuning fork can be used in a similar manner in the study of any solid viscus or tumor.

TECHNIC FOR EMPLOYMENT OF AUSCULTATORY PERCUSSION

1. Adjust the stethoscope bell approximately at the centre of the organ to be outlined, thus permitting the bell to correspond to the hub of a wheel, and consider the periphery of the organ, or felloe of the wheel, to surround an area extending some distance from the bell of the stethoscope and beyond the margin of the organ under study. The spokes, or radii lead from the hub outward to the line transcribing the outer circle. (Percussion is to be made along the line of these radii) (Fig. 1). The stethoscope bell is applied either over the centre of the organ or at a remote point on one radius.

2. Begin percussion away from the bell (outside the organ under study) and continue directly along one radius (after every stroke, lift the finger from the chest wall, and advancing it half to one inch toward the bell of the stethoscope) (Fig. 1).

3. Strike but a single stroke at one location on the chest. Do not hit your finger two or more times when it is located at the same area, as this gives confusing notes.

4. Make your percussion strokes of the same force, and time, in the same manner as though you were striking the keys of a musical instrument. Change in note is more easily appreciated when percussion strokes are rhythmic.

5. Whenever there is a sudden change in the percussion note obtained through the stethoscope, mark this point on the chest wall and again start at the rim of the wheel and percuss up to the same point as previously marked. In the event the change is again audible at this same point, some solid organ or tissue underlies the area where such change is detected.

6. Percuss along radii from different directions—mark each point where the percussion notes change, and thus crudely map out the organ in question (Fig. 1).

7. Place the stethoscope bell at one of the marks on a radius where the note changes—start percussing from outside the original wheel (outside the margin of the most distant part of the organ in question), and advance toward the stethoscope, and at the same time toward the further position of the consolidated area. The object is to reach the area where the note changes at the most distant point from the bell. Should the note change where it previously did, then both this marking and the one where the bell is located are corrected—(method of proof).

8. After having proved the first marks on the spokes of the wheel to be correct draw a line con-

Fig. 5

Fig. 6

Fig. 5.—Percussing from below upward to determine the lower border of the liver, in the midclavicular line. Stethoscope bell may be placed over the liver, at any distant point on front or back of the chest or abdomen.

Fig. 6.—Percussing from above downward to determine the upper border of the liver, in the midclavicular line. The stethoscope is placed at the lower edge of liver dullness.

Fig. 7

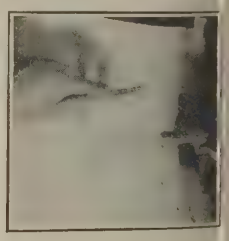

Fig. 8

Fig. 7.—Stethoscope placed over the centre of the liver, percussion is made from the left axilla advancing toward the left nipple line. This is the only known physical method through which we are able to determine the extent (to the left) of the left lobe of the liver.

Fig. 8.—Stroking the skin while listening to determine the lower border of the spleen. (Spleen always between ninth and eleventh ribs.)

necting these marks on the radii and thus outline the actual size of the solid organ.

9. Never continue percussion over the solid organ, or the solid pathological area you are endeavoring to outline.

10. Stroking of the skin and the use of the tuning fork, while listening, are delicate methods, and have herein been described in detail (see Figs. 2, 4, 11, 14, 18).

SOLID VISCERA

Heart.—In ascertaining the exact size of the heart only a moderate amount of experience is required. I have found that students learn quickly to outline the heart by auscultatory percussion. It is therefore suggested that the student first learn ordinary percussion, and later take up the subject of auscultatory percussion.

In outlining the heart the foregoing statements set forth clearly the technic to be employed, as well as the various precautions necessary. The accompanying illustrations (Figs. 1, 2, 3) will serve to explain the various steps in the technic.

Auscultatory percussion enables the clinician to determine the exact size of the heart, and to map out the edge of the organ that is overridden by the lung. This means of ascertaining the size of the heart is not new, it was employed by Clark in 1840, and has since been found to be the most valuable, practical means of outlining this organ.

The lower portion of the heart that rests upon the upper surface of the diaphragm and is in contact with the superior surface of the liver can be readily separated from the liver at this particular point, as is shown by the illustration (Fig. 3).

New growths of the mediastinum and aneurysm are also detected by auscultatory percussion and their exact size and shape are readily determined. Mediastinal new growths are quite easily separated from the heart by the technic given to distinguish between areas of liver and heart dullness. Dilatation of the aorta has been detected by auscultatory percussion, and I have repeatedly confirmed this finding by x ray study.

One is often called upon to differentiate between pleural effusion and cardiac dilatation, and I have also found auscultatory percussion a reliable means for deciding this differential diagnostic point. In a case recently seen in the Philadelphia General Hospital, it was found possible to outline the pericardium in pericardial effusion, and at the same time to determine by both ordinary percussion, and by auscultatory percussion, the upper boundary of a left pleural effusion.

In 1897 Stengel placed great stress upon the fact that he was able to separate the lower boundary of a dilated heart from the upper surface of an enlarged liver through the use of auscultatory percussion.

The dimensions of the pericardium when filled by either liquid or air or gas can be accurately determined by auscultatory percussion. When air is

FIG. 9

FIG. 10

FIG. 9.—The stethoscope may be held against the spine while percussion is made over the corresponding areas of the lung. The author has adopted this portion of Alexander's method in routine work, and believes it to be indispensable.

FIG. 10.—Alexander placed the bell of his special stethoscope over the sternum holding the hand tightly over the instrument and allowing the index and second fingers to cover the apex of one lung, while the thumb is shifted over a corresponding area of the opposite lung. The slightest difference in the percussion note over the apices is detected through this method.

FIG. 11

FIG. 12

FIG. 11.—Stroking the skin while a stethoscope bell is placed over some portion of a consolidated area makes it possible to determine the exact extent of pulmonary consolidation and infiltration.

FIG. 12.—Stethoscope bell placed over the stomach while percussion is made from the left axilla, advancing downward and to the right, to determine the extent of the stomach in this region.

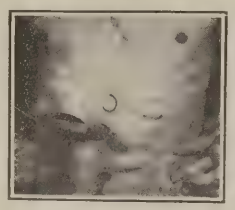

FIG. 13

FIG. 14

FIG. 13.—Stethoscope bell placed near the pylorus, represented by a circle, while percussion is made from below the fundus upward to determine the lower extent of the stomach; patient standing. The note of stomach tympany obtained by auscultatory percussion is distinctive, independent of what portion of the stomach is covered by the bell of the stethoscope.

FIG. 14.—Stethoscope bell located near the left inferior border of the stomach. The tuning fork while vibrating causes a characteristic note when placed upon the abdominal wall overlying any portion of the stomach. Practice sufficient to educate the operator's ear to the characteristic sounds heard when the tuning fork is employed in the study of the stomach, colon and lung, is necessary.

FIG. 15

FIG. 16

FIG. 15.—The descending colon has a fixed point just within the left anterior superior spine. Percussion at this point produces a characteristic colonic tympany when listening with a stethoscope bell placed over any other portion of the colon.

FIG. 16.—The colon ordinarily rises high in the left anterior axiliary line, an elective point to place the stethoscope bell when percussing, from the right flank advancing toward the umbilicus, to determine the right border of the ascending colon or the cecum.

present in the pericardium the percussion strokes should be very light, lest too much sound result in confusion. Stroking of the skin (Fig. 2) by means of a fine file is preferable to percussion in studying the pericardium. I have found the tuning fork to give unmistakable physical evidence in this connection.

Tuning fork.—The technic for the employment of

Fig. 17

Fig. 18

Fig. 17.—Percussion from the right flank, advancing to the left, to outline the right border of the ascending colon. Note transverse line at umbilicus—dotted line outlining colon.

Fig. 18.—Stethoscope bell placed over the right border of the ascending colon; stroking the skin with a fine file, advancing from left to right, to determine the left border of the ascending colon.

the tuning fork differs in no way from that given for auscultatory percussion (Fig. 4) except that in place of percussing, the tuning fork while vibrating, is placed upon the surface of the body, advancing gradually toward the stethoscope bell, in the same manner as outlined for auscultatory percussion and auscultatory palpation (avoid bone conduction). The tuning fork gives such a decided difference in sound when it reaches a solid viscus, and when it travels from a surface overlying a hollow viscus of a smaller or greater calibre (colon to stomach) that this sign is immediately apparent even to the untrained ear. The tuning fork may be advantageously employed in the outlining of both solid and hollow viscera (Figs. 4, 14), and in studying lesions of the lungs.

Liver.—It is especially easy to locate the exact dimensions of the liver and this is done through the use of certain lines known to diagnosis. The midclavicular line which extends from the centre of the clavicle to the centre of Poupart's ligament, is the most valuable landmark in measuring the liver. The median line leading from the ensiform cartilage to the pubis is also employed, and the left midclavicular line (Figs. 5, 6). The extent of liver dullness by auscultatory percussion of the right midclavicular line, in normal subjects, when standing is five and a half to six and a half inches. In the median line the extent of dullness below the tip of the ensiform will be found to vary between two and a half and four inches. In the left midclavicular line the extent of dullness is conspicuous in the presence of hypertrophy involving the left hepatic lobe (Fig. 7). Liver dullness may also be located in the right midaxillary line and in the scapular line, but these points are only used in demonstrating the exact size of the liver.

A point of value in diagnosis is the establishment of the upper line of the liver dullness, together with the upper border of a pleural effusion. Auscultatory percussion discloses accurately the extent of liver dullness, and ordinary percussion will in all instances establish the upper line of a pleural effusion. The question of movable dullness should be taken into consideration in making a differential diagnosis. The line of contact between the liver and a right pleural effusion is an irregular one, the dome of the liver rising to about the fifth rib. The portion of pleura resting on the dome of the liver and extending down on the diaphragm contains a cap of fluid of varying depths, and percussion notes vary greatly over this area. By placing the stethoscope well toward the inferior margin of the liver (Fig. 6) it will be possible to detect the upper border of this organ. In making deductions from the findings given by auscultatory percussion or auscultatory palpation over this portion of the liver, one must ever keep in mind the topographical anatomy of this region. I have recently studied in my wards at the Philadelphia General Hospital two cases with pronounced distention of the gallbladder and in both instances it was possible to outline the gallbladder by auscultatory palpation (stroking of the skin). The gallbladder was palpable in both cases and while the x ray failed to show any special shadow in the gallbladder region, the clinical facts disclosed by auscultatory palpation were confirmed at autopsy.

Kidneys.—Tumor of the kidney is detectable through both auscultatory percussion and auscultatory palpation. The technic previously outlined for the liver will enable the operator to ascertain the actual size of any tumor originating from the kidney.

Tumor of the pelvic organs, especially ovarian cysts and uterine fibroids, can be localized and satisfactorily studied by these methods.

Spleen.—Place the stethoscope in the left midaxillary or the posterior axillary line, at a point between the ninth and eleventh ribs. Splenic note is always obtained at this area (Fig. 8). In event of a tumor in the left flank, it can be separated from splenic tumor by placing the stethoscope at the above mentioned point, and then starting percussion beyond any abdominal tumor and advancing toward the stethoscope. I have found it possible to separate enlargement of the spleen from enlargement of the left kidney, and other abdominal tumors. It was recently found possible to distinguish between enlargements of the spleen and a small abdominal aneurysm, in a case studied at the Philadelphia General Hospital.

Lungs.—Whenever employing stethoscopic percussion in a study of the apices one must ever be alert to the possibility of confusing notes due to the bony anatomy of this region. Any variation in force, of the percussion stroke, may also give misleading sounds.

The method suggested by Alexander gives the best results when comparing the two sides (Figs. 9, 10). A stethoscope with two diaphragms is used, and the conduction of vibrations through the operator's fingers to the upper diaphragm gives unequaled results in beginning disease of one apex. Alexander's stethoscope and his technic must be regarded as important additional steps in chest diagnosis.

Auscultatory percussion is of inestimable service in outlining cavities and areas of pulmonary consolidation, where it is impossible to move the patient. In the daily observation of cases of pneu-

monia it is the only method by which we can ascertain the actual outline of the involved lung without tiring, or annoying the patient. It is in this connection that auscultatory percussion contributes one of its greatest services.

Areas of consolidation or of partial consolidation are easily detected at the bases and central portions of the lungs. It has been found by me and by Alexander that in the study of pulmonary disease of the insane, the method of diagnosis under discussion has no peer. It is possible by stroking of the skin to detect small areas of consolidation in any portion of the lung (Fig. 11). Stroking of the skin while listening is also of service in studying patients who have pulmonary disease complicated by laryngitis. My experience is that this method is more helpful in the study of pulmonary conditions in children, adults desperately ill, and in the insane, than is any other one physical method.

Hollow abdominal viscera.—I have found after the employment of auscultatory percussion and palpation both in private and hospital routine examinations that unparalleled advantages of this method are apparent in examinations of the hollow abdominal viscera. The stomach and colon through the employment of auscultatory percussion may be sketched upon the patient's abdomen with as great a degree of accuracy as can be done by the x ray. Stewart employed auscultatory percussion to determine the location of the gastric fundus in 1897.

In determining the size of the stomach, the first essential factor is to localize definitely the pylorus, and this being done, determine next to what height gastric tympany rises in the left anterior and midaxillary lines (Fig. 12) and third, locate the inferior border of the fundus (Fig. 13). One can sketch the exact shape of the stomach on the abdominal wall. This procedure gives the clinician a life diagram which when considered with relation to the other abdominal viscera, and to the patient's general condition, completes a chain of data that holds an important place in abdominal diagnosis. The note of gastric tympany when obtained by auscultatory percussion and palpation is vastly different from colonic tympany, and from the tympany obtained over the small intestine.

Colon.—A study of the colon necessitates that the clinician be wholly cognizant of the topographical anatomy of this portion of the alimentary tract. Even more essential is it that one recognize the four fixed points or permanent attachments of the colon to the abdominal parietes.

"Of the three parts of the colon, the first or ascending passes upward from the cecum to the under surface of the right costal arch, where below the liver it bends sharply to the left to form the hepatic flexure. From this point the transverse portion, more or less in the form of a U shaped tube, loops across the umbilical region to the left costal arch beneath which it twists upward, backward, and to the left as the splenic flexure, below the spleen and behind the stomach, and at a higher level than that of the hepatic flexure. The descending portion of the colon runs down the left side of the abdomen from the splenic flexure to the iliac crest" (Figs. 14 and 15).

It is my custom to divide the abdomen into quadrants. This scheme presents many advantages, and is rapidly displacing other arbitrary divisions of the abdomen.

A study of the colon with a view to ascertaining its location and size is begun by placing the stethoscope bell over the colon at one of these socalled fixed points, and while listening make gentle percussion over another fixed point well removed from the stethoscope bell (Fig. 17).

In event of the bell resting immediately over the colon and percussion being made over another section of the organ a characteristic ringing note is audible. The next step after determining the location of the cecum is to reverse the order of technic (Fig. 18) and place the bell of the stethoscope over the distended or larger colon and begin percussion well into the right flank, advancing the width of the finger after each stroke until the characteristic colon note is heard.

The stethoscope may be allowed to remain in the same position (Fig. 18) and percussion begun to the left of the median line below the umbilicus (with each stroke, advance to the right until the border of the colon is reached, when the same colonic note is heard). It will be always noticed that while advancing in percussion from the stethoscope bell the note over the colon further from the location of the bell is distinctly increased. This method requires but little practice for its employment and will enable the examiner to outline definitely the cecum and ascending colon. Since the employment of this method, I have found that dilatation of the cecum and in fact of the entire colon is by no means uncommon. In both private and hospital cases, I have made it a rule to check the findings through x ray studies, and but slight difference in the calibre of the colon was noted.

Dilatation of the cecum has been found by me to be common in focal infection. (Nine examples shown in clinic before the members of the American Congress of Internal Medicine in April 1923, studies made with Frederick Weidman). A large percentage of these cases have shown lessening in the calibre of the cecum and ascending colon following removal of infective foci.

Estimation of the transverse diameter of the colon at any given point, after it has first been outlined by auscultatory percussion, is more closely determined by auscultatory palpation. Place the stethoscope bell over one border of the colon and by stroking the skin with a fine file, advance toward the opposite border of the colon. The note obtained when the file is drawn across the skin overlying the colon is unmistakable (Fig. 19).

A series of private cases have been studied by this method and in all of these I have had an x ray study made by M. K. Fisher, whose findings correspond well with those obtained by auscultatory percussion and auscultatory palpation. It is of interest in this connection to note that four of these cases also displayed abnormalities of the sella turcica and pituitary. Further study is necessary to determine whether a definite clinical relationship exists between pituitary disturbance and dilatation of the colon.

2024 Chestnut Street.

The Balance Between Food Intake and Insulin Dosage

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The effective use of insulin depends on two factors, one, a properly adjusted food intake, and the other, adequate control of sugar in urine and blood. It is the purpose of this paper to discuss these essential elements of diabetic treatment as they present themselves in the record of a patient whom we have had the privilege of studying in the hospital during a continuous period of five months.

CASE RECORD

Case.—E. C., sixty-six years of age, Scotch, a housewife, was admitted to the New York Polyclinic Hospital, in the surgical service of Dr. A. S. Morrow, on August 25, 1923, with diabetic gangrene of the left foot and calf. In the family diabetes was unknown. The patient had had typhoid at thirty-one, without complications. Otherwise, she had been a healthy and hardworking, temperate woman. She weighed 160 pounds, one year before admission; height, five feet one inch.

In November, 1922, a warty growth, which she pulled from a toe, was succeeded by an ulcer, which did not heal. Loss of weight set in, with thirst and frequency of urination. Not until August, 1923, when the entire foot had become involved, was the urine examined and sugar discovered. The patient refused operation at one hospital, and came to the Polyclinic Hospital on August 25th, seeking palliative treatment.

On admission, the woman was greatly emaciated, septic, and weakened; there was marked glycosuria (2.4 per cent.) and ketonuria, and the blood sugar was 0.25 per cent. Restriction of the diet and the palliative measures did not prevent extension of the gangrene and infection. The patient's consent was at length secured, and on September 7th, at 4 p. m., under gas-oxygen anesthesia, amputation at the lower third of the thigh was carried out by Dr. Morrow. The patient then came for the first time under the care of the diabetic service.

At 5 p. m., one hour after operation, twenty units of insulin were given subcutaneously. The first postoperative voiding at 9 p. m. gave heavy reduction of Benedict's solution, and strong nitroprusside and ferric chloride reactions. A voiding at 4 a. m. showed less reduction and blood at 8:30 on the morning after operation contained 0.28 per cent. sugar, with a CO_2 combining power of 39 volumes per cent. Physical examination at this time disclosed a painfully thin, even cadaverous looking, individual. The weight was evidently less than eighty pounds. There was marked pallor, the skin was dry; the peripheral arteries were moderately sclerosed, the knee jerk was sluggish. Heart, lungs and abdomen were without pathological findings; the blood pressure was 110/80.

The immediate problems were to check acidosis, and to provide the optimal physiological conditions for healing, namely, the reduction of hyperglycemia to a level within normal limits, and a protein intake sufficient to insure nitrogen balance during the process of tissue formation. The diet chosen was carbohydrates 60, protein 50, fat 60, yielding 980 calories. The protein was given on the basis of one gram to the kilogram of body weight, fifty kilograms being an estimation which allowed for the loss of the leg and a desirable degree of undernutrition. Sixty grams of carbohydrate, plus the glucose derived from protein (twenty-nine grams) and from fat (six grams) calculated after Woodyatt's formulæ, provided an amount of sugar, which if completely oxidized itself, would also insure the oxidation of the fatty acids of the diet plus those ketones responsible for the existing acidosis. This diet was given in three equal portions, and twenty units of insulin, one half hour before each meal, was the amount tentatively selected to effect oxidation of the glucose.

After forty units on September 9th, glycosuria was reduced to a faint trace. To avoid possible hypoglycemia, after the urine had become sugar free, the insulin dose was cut to forty and then to thirty units a day. On September 12th, the blood sugar was 0.14 per cent., with no glycosuria or ketonuria.

To approach a maintenance level, the calories were raised to 1,250 by making the diet carbohydrate 60, protein 50, fat 90. Sugar reappeared in the urine, along with diacetic acid, and even with forty-five units a day, blood sugar rose to 0.20 and 0.19 per cent. The wound was sloughing extensively. By reducing the diet to carbohydrate 30, protein 50, fat 90, on September 23d, and the insulin to ten units, three times a day, the blood sugar was held down to 0.16 per cent. on September 25th, and 0.13 per cent. on September 28th. During this period the wound progressed toward healing. The attempt to reduce insulin to ten units twice a day led to a temporary hyperglycemia of 0.25 per cent. A balance was struck by making the doses fifteen units before breakfast and ten units before supper, with the result that the blood sugar was 0.12 per cent. on November 1st, and the same on November 12th. By the latter date, the wound was healed, the weight was eighty-four pounds, and there was a striking improvement in the patient's color and general appearance.

Calories were now raised to 1,670, by increasing fat to 150 grams, carbohydrate remaining unchanged. In so doing, the fatty acid glucose ratio, expressed in grams, was raised from the conservative 1.5:1 to 2.1:1, but only rarely did a trace of acetone appear in the urine. On November 20th, the blood sugar was 0.11 per cent., and the patient weighed ninety pounds on November 27th.

With the change to the more powerful ("U") preparation of insulin, the doses were reduced to ten units before breakfast and eight units before supper.

A study of blood sugar variations during the day, on the schedule of two doses of insulin a day, was made on December 11th, with these results: 8 a. m. (before insulin), 0.103 per cent.; 11 a. m., 0.10 per

cent.; 3 p. m., 0.13 per cent.; 9 p. m., 0.13 per cent. For the purpose of comparison, the eighteen units of insulin were now given in a single dose before breakfast, and after a week on this schedule, this curve was obtained; 8 a. m., 0.12 per cent.; 11 a. m., 0.12 per cent.; 3 p. m., 0.13 per cent.; 9 p. m., 0.13

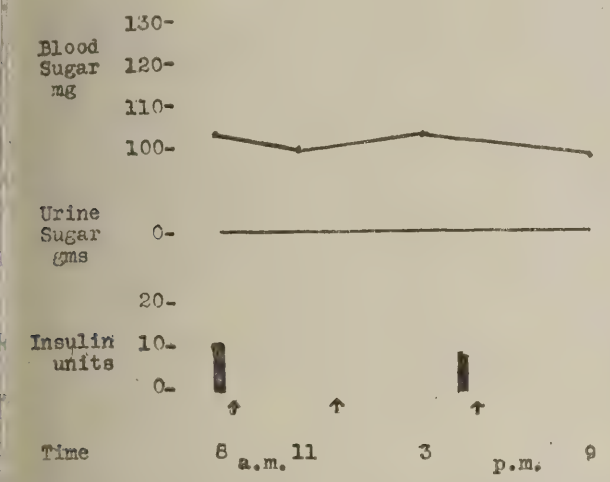

FIG. 1.—Patient E. C., December 11, 1923. Blood sugar levels with ten units of insulin before breakfast and eight units before supper. Diet, carbohydrate 30, protein 50, fat 150, given in equal portions at times marked by arrows.

per cent. The urine at no time showed sugar. The weight on December 22d was ninety-five pounds. The patient was beginning to walk on crutches.

With this favorable progress, the diet was raised first to carbohydrate 50, protein 50, fat 150, and then to carbohydrate 60, protein 50, fat 150, while insulin was reduced to fifteen, ten, and finally five units once a day. After January 10th, when the blood sugar was 0.14 per cent., the insulin was discontinued. The patient left the hospital unexpectedly on January 20, 1924, when the opportunity presented for her to enter a home. The urine remained sugar free up to discharge, and the patient wrote in September, 1924, to say that she was very well. Further blood sugar determinations are of course extremely desirable as a guide to proper dietary restrictions.

It is a pleasure to acknowledge here the cooperation of Dr. C. H. Gratz, resident physician, Miss Hilzer, dietitian, and Miss Swett, of the pathological laboratory, during this long period of study.

DISCUSSION

Experience with insulin teaches that the problem of dose is an individual one for each patient, and that in the same patient, as this case shows, this dose may change from time to time. On the average, perhaps, five units of insulin will remove ten grams of glucose from the urine, or will lower blood sugar by fifty or sixty milligrams to the 100 c. c. In the specific case, however, the effect may be somewhat greater, or much less, and especially is the lessening of the power of insulin true when infection, or coma, or both, exist. Other common factors that produce variation in insulin effect are body mass, the amount of glycogen storage, and the diet.

If a balance is to be struck, therefore, between food intake and insulin dose, it is our practice to take the dietary factor the fixed or known quantity. On the most practical, as well as theoretical, grounds, a knowledge of the food ingested and utilized, first in terms of carbohydrate, protein and fat, and thereby also in calories, and secondly in terms of glucose and fatty acid, is indispensable, 1, in determining the tolerance of the individual, and from this, his need for insulin; 2, in maintaining a safe proportion between the ketone and glucose forming elements of the diet; and 3, in preserving the nitrogen and energy balances of the body. With the diet controlled in this way, insulin may be given in such amount as to maintain a sugar free urine, and under ideal conditions, with the absence of hyperglycemia. Furthermore, the safety and economy of a plan adhering to moderate undernutrition should be realized. The instances that begin to come under observation, of patients who have received insulin treatment for months without a calculated diet plan, with sugar always present in the urine, commonly with a gain in weight and almost certainly without a gain in tolerance or a real checking of the progress of the disease, and who finally are stranded financially with their investment yielding no more interest, warrant repeated insistence on the principles of good diabetic therapy, with or without insulin.

In the effort to simplify the program of the majority of diabetics under insulin, whose injections must be given by themselves or a member of the family, we have been interested in replacing divided doses by one single daily dose. While in some clinics amounts of only a few units have been divided into three or two portions, each to be given before a meal, with the idea of providing an insulin distribution as nearly approaching normal physiological conditions as possible, we have been guided by the suggestions of Woodyatt and of Wilder regarding the single daily injection. In general, this has been given before breakfast, or in some instances before one of

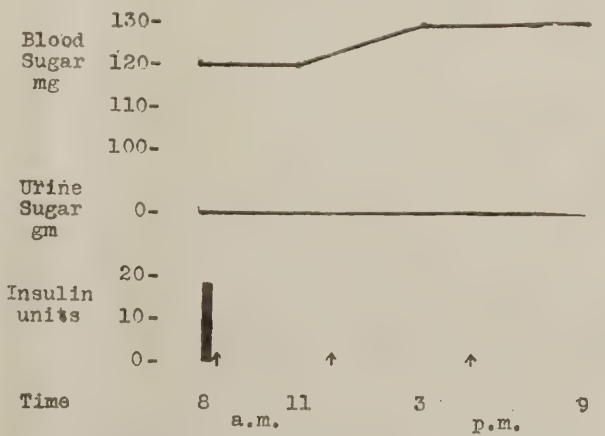

FIG. 2.—Patient E. C., December 19, 1923. Blood sugar findings after single dose of eighteen units of insulin. Diet, carbohydrate 30, protein 50, fat 150, given in three equal portions at times marked by arrows.

the other meals, to suit the convenience of the patient. Amounts from five to twenty-five units of the newer insulin have been given, without any symptoms of reaction in any case. It is interesting to note that the patient, E. C., did not have a single symptom of hypoglycemia, though naturally she was watched and questioned closely when eighteen units of insulin were being given and when the blood sugar was 0.12 per cent. The level of blood sugar in this patient is higher, by twenty to thirty mg., on the single dose

schedule, as compared with the previous week, with the same quantity divided, but the evenness of this and other curves would suggest that when too much strain is not thrown upon the pancreas by food intake, the injected insulin carries the burden of insular function for a period, after which the endogenous secretion is enabled to meet the demands of the remainder of the day. On the other hand, when the diet and insulin dose have been such that the fasting blood sugar has not been brought below 180 or 200 mg., it is not surprising that the single dose does not command the situation, for no opportunity has been given the islands to rest and regain secretory power.

If, for any reason, it is not possible to obtain a curve throughout the day, we have found in those cases in which the urine is kept constantly sugar free, that the highest level of blood sugar is usually in the evening, and that if glycemia at 9 p. m. is, say 150 mg., a satisfactory balance has been established. In one patient only (a school girl of twelve, who has gained five pounds during the last four months, and now weighs ninety-one pounds, height four feet eleven inches, on a diet of carbohydrate 60, protein 70, fat 75, and who takes twenty units daily before breakfast), has there been a feeling of warmth or flushing. This came on half an hour after the injection, that is, during the meal, on two or three different occasions, lasted about ten minutes, and was not accompanied by nervousness, trembling, or other symptoms of hypoglycemia. This girl's urine has been sugar free, except for two days during a severe cold, when her blood sugar went up to 300 mg., in place of the levels of from 175 to 150 mg., at which it is usually found. This patient is active physically, is at the head of her class in school, prepares her own diet, with the help of her mother and sister and scales, gives her own insulin, and never has a diabetic symptom.

SUMMARY

When insulin is required over an extended period, as contrasted with the emergencies of diabetes, its effective use will depend on adequate regulation of food intake on one hand and prevention of hyperglycemia on the other.

The maintenance of blood sugar within normal limits is of importance in the healing of wounds, hastening the process, or even enabling the healing to occur.

Normal glycemia is of equal importance in assisting the insular tissue, thus relieved of strain, to reach higher levels of function. Insulin permits this restoration simultaneously with a satisfactory level of nutrition.

Insulin is given with greatest safety and economy when a conservative degree of undernutrition is maintained.

In many cases, insulin may be administered to the patients in a single daily dose with the result that the amount of sugar in the urine and the blood will be controlled satisfactorily.

131 East Sixtieth Street.

Date	Food Intake grams C.	P.	F.	Cal.	Blood Sugar mg.	CO_2 vols.%	Urine gluc.	acet.	diac.	Insulin units	Remarks
1923		grams									
Aug. 25							2.4%	+++		0	Admitted
28					250						
Sept. 7							+++	+++	+++	20	Operation
8	60	50	60	980	280	39	++	++	+	60	
9							+			40	
12					140		0	0	0	30	
13	60	50	90	1250						30	
14					200		++			45	
22					190		++	+	+	45	
23	30	50	103	1250			0			45	
25					160		0			30	
28					130		0			20	
Oct. 4					150		0			20	
15					250		0			25	
24					120		0			25	
Nov. 1					120		0			25	Wt. 83 lbs.
12					120		0			25	Wound heale
14	30	50	150	1670						25	
20					110		0	+		25	
Dec. 8											Wt. 90 lbs.
11					103		0			18	New insulin
19					120		0			18	
22	50	50	150	1750						18	
28					130		0			15	
Jan. 2	60	50	150	1790	140					10	Wt. 95 lbs.
10					140		0			5	
20							0			0	
										0	Discharged

Treatment of Bronchial Asthma.—Leo von Gordon (*Schweizerische medizinische Wochenschrift,* April 3, 10, and 17, 1924) states that there is no fixed treatment in the sense of a specific remedy for bronchial asthma because the etiology varies in the different cases. The treatment should be adjusted to each individual case. Calcium (in the form of calcium chloride) and iodine should be tried in every case. The general treatment includes treatment of the chronic bronchial catarrh and the consideration of the secondary cardiac weakness and expiratory exercises. In isolated cases the injection of adrenalin, atropine and morphine (exceptionally in cases where there is an irritative cough) may be tried.

Foreign Bodies in the Tongue

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The possibility of a foreign body in the tongue at first thought seems an unlikely occurrence. From its situation in the mouth, and the protection afforded by the teeth and jaws, one would feel that the likelihood of a foreign body entering the tongue was rather remote. However, if we analyze the situation and consult the literature on the subject, we will find that it is far from uncommon, and several interesting facts will be brought out.

The tongue is composed of a bundle of muscle fibers covered by mucous membrane and there is little resistance to a body penetrating the tongue. Three times a day food passes over its surface, and people are in the habit of putting numerous things into the mouth at odd times such as tacks, needles, pins, and pipestems, and all that is required is an accident to supply the necessary force and the body will easily penetrate. A striking fact is that in the majority of cases reported, the foreign body is overlooked at the time of the accident and remains for some time, causing more or less pronounced symptoms, and indeed has proved fatal on more than one occasion.

Butlin and Spencer (1) call attention to the symptoms as follows:

"When the nature of an accident renders it possible that a foreign body may be embedded in the tongue, it is scarcely necessary to say that it should be carefully sought for and removed as speedily as possible. Sometimes it happens that the foreign body is not suspected, and either on account of its small size, or the depth at which it lies, there is no hardness over it, and it remains embedded and unsuspected but the wound does not heal. In a few days, the first serious symptoms may be a secondary hemorrhage, and this alone ought to excite suspicion. If hemorrhage occurs it is generally repeated, and if the body is not soon discovered and extracted, a serious termination of the case may result. In the absence of hemorrhage, inflammation may be excited by the presence of the body and a hard circumscribed indolent tumor is found through which a sinus sometimes leads down to the exciting cause. In some cases more severe inflammation is excited, suppuration occurs, sinuses form with fungous granulations protruding. Under these circumstances, the foreign body may be spontaneously discharged, especially if small, but it rarely excites such disturbance, and more commonly remains buried in the indolent inflammatory tumor which has formed around it, and cases are on record in which foreign bodies have thus remained for years."

Fork (1) relates the case of a Prussian soldier who had his teeth driven into his mouth by a bullet. On the thirty-second anniversary of the battle, swelling appeared in the tongue from which a second lower molar was removed, having remained embedded all those years.

A foreign body may be suspected if the penetrating wound does not heal readily. A careful examination of the sinus should be made with a probe. At times the wound of entrance may heal and the indolent swelling result. The history of the accident should aid and in every case should be thoroughly sought out. From the records of cases which have been reported, it would seem that sufficient attention is not paid to the possibility of a foreign body even in the case where the history suggests the possibility, and every effort should be made to exclude foreign bodies before assuming that the condition is due to some other cause. The fact that a wound of the tongue does not heal may be at times ascribed to the possibility of a tuberculous condition. In cases where the wound has healed and an indolent tumor results, the condition has been mistaken for a malignant growth and unnecessary mutilation resulted. When all efforts at manual detection in a suspected case have proved of no avail, a radiographic study should be made, as many of these foreign bodies may be revealed.

The extraction of a foreign body from the tongue should not be regarded lightly, as the history of some of the reported cases will show. Butlin advises that every case of foreign body should be removed only after due preparation for the possibility of hemorrhage. The patient should be anesthetized in a good light, mouth well open, a thread passed through the tongue and a proper assistant at hand.

In looking up the literature on the presence of a pipestem in the tongue, I was able to find five cases which I will briefly detail:

Case I.—The first case (1) was a man aged twenty years admitted to Guy's Hospital under Bransby Cooper. Three days before, he was smoking when the elbow of a companion struck the bowl of the pipe and drove the pipestem into his tongue, breaking off three inches. He fainted on account of the pain, and the surgeon found a wound passing obliquely from right to left, which he probed and struck nothing. No bleeding occurred but he sought admission for swelling of the tongue and throat which impeded speech and swallowing. On the fifth day, the swelling was less and the wound noted in the tongue had closed. On the sixth day, he vomited a pint of blood, and this vomiting recurred so that by the twelfth day he was extremely anemic. No wound could be made in the tongue from which the blood would come, but there was still considerable swelling of the tongue and fauces, and the jaws could not be opened widely so that the view was incomplete. He continued to vomit blood and died on the fifteenth day after vomiting blood and clots.

Postmorten examination.—The wound had transfixed the tongue from left to right and both openings had closed, but in the tract of the wound within the tongue was a piece of pipestem two and one half

inches long. Opposite the wound of exit on the left side was a small irregular opening just behind and below the left tonsil, from which injected material came freely when the carotid artery was injected. This was doubtless from the internal jugular vein as the clinical course of the case indicated, but there was no dissection made to clear up this point.

Case II.—A curiously similar and more startling case occurred to Hamilton (1) at the London Hospital. A man aged thirty was smoking when he fell and drove his pipestem into his tongue. The tongue began to swell, and gargles were used. On the fourth day, he was taken to the London Hospital with the tongue enormously enlarged. The dresser lanced the tongue and let out an ounce of pus. As the respirations became difficult; Hamilton was sent for and he probed the abscessed cavity and struck the pipestem, and seizing it with forceps pulled out a length of four inches. This was followed by a torrent of blood, and the patient died in less than a minute in spite of compression of first one and then both carotids.

Postmortem examination.—It was found that the pipestem had entered the right tip of the tongue, had emerged on the opposite side near the root and then passing beneath the left tonsil had gone completely through the left carotid artery and the internal jugular vein.

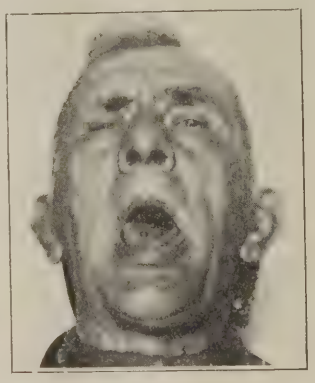

Fig. 1.—Patient with pipestem embedded in tongue. Showing stem after having been loosened and withdrawn slightly.

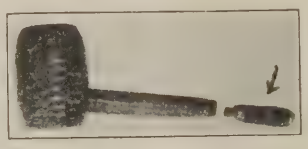

Fig. 2.—End of pipestem wrapped with string which was removed from tongue after remaining embedded for sixty-three days.

Case III.—Anderson (2) reports a case in which the amber stem of a pipe had remained embedded and unrecognized for a month in a man's tongue.

Case IV.—Murry (3) reports a case in which a pipestem remained embedded in a man's tongue for eight months. It was three quarters of an inch in length, one half inch wide and one quarter inch thick. A sinus had been present all during this time which entirely disappeared on the removal of the pipestem.

Case V.—Saffley (4) reports the case of a man aged sixty who fell with a clay pipe in his mouth. The tongue was swollen and painful when seen four days later. The patient was given mouth washes. He returned in three weeks when the sinus which had formed was incised, but nothing was found. Two weeks later, under general anesthesia, the sinus was again explored and widely opened, a pipestem one inch in length was removed after having remained thirty-five days. Healing resulted.

The case which came under my observation recently has in many respects a similar history. The patient was a man aged seventy-two who gave the following history:

Case VI.—He was returning home late one night when he fell with his pipe in his mouth. He immediately suffered great pain in the mouth and bled a great deal. The patient was so shocked that he lay on the ground for seven hours before he was able to get home. He finally got home and the next day called a doctor. The physician who saw him twenty-four hours after his injury reported that at that time the tongue was so swollen he could neither talk nor swallow, and the glands of his neck were swollen as well as the tissue as far down as the sternum. The patient suffered such great pain that he was removed to the hospital the following day, where it was necessary to feed him through a tube. This was kept up for a week, at the end of which time he could swallow a little. It was then found that his teeth had cut his tongue, and four of these were extracted and pus seemed to come from one lower molar on the left side that had been extracted. Pus was also noticed coming from the dorsum of the tongue about three quarters of an inch from the apex and to the right, and when pressure was made under the chin pus would flow also at the right side. Later, a hard surface at the right side of the tongue could be felt, but at no time was an opening seen on the right side of the tongue. A probe was used in the opening on the dorsum of the tongue but would not pass for any distance, and nothing was discovered to suggest the presence of a foreign body. On the fifth day the patient had a severe hemorrhage and brought up a puspan full of blood. This hemorrhage did not recur. Several other members of the hospital staff examined the patient, and all wondered at the extensive injury from such a slight cause. The attending physician went carefully into the history, and particularly asked if the patient had been smoking a pipe, or if he had a stick or anything in his mouth at the time of the accident.

The swelling finally disappeared somewhat but the patient suffered great pain, and after eight weeks left the hospital and came to Philadelphia where he applied for treatment at the surgical dispensary of one of our hospitals. In the meantime, a sinus had formed under the chin and was discharging pus. After examination at the dispensary, the patient was given a mouth wash and ichthyol ointment applied to the neck. He visited the dispensary daily for nine days and received no other treatment. As the pain in his mouth continued, he consulted a dentist, as he thought the pain might be coming from a tooth, which tooth the dentist extracted, and noting the condition of his tongue and mouth referred him to me for possible malignant disease of the tongue and floor of the mouth. Examination at this time showed marked infiltration of all the tissues under the chin with a sinus just above the thyroid cartilage discharging pus. Examination of the tongue showed an infiltration of the entire anterior part. There was marked salivation, difficulty in eating and talking. A small ulcerated area was present on the dorsum of the tongue about three quarters of an inch from the apex. The case had many aspects of a malignant condition with the exception that the tongue and the tissues of the neck were extremely sensitive, and that the patient suffered great pain continuously. The patient in giving the history suggested that he felt that the condition was

caused by a tooth cutting his tongue. This caused me to investigate the ulceration on the dorsum of the tongue, and on using the probe a hard body was promptly encountered. This I thought was possibly a tooth which had been knocked out and was still sticking in the tongue. I then took hold of the hard body with a pair of forceps and with some difficulty was able to remove it. It proved to be the end of a pipestem from an oldfashioned corncob pipe. The stem was well wrapped with string and the pipesteam measured one and one half inches long, one half inch wide, and three eighths of an inch thick. It had remained in the tongue for a period of sixty-three days. The removal was followed by a discharge of pus, but there was no bleeding. The sinus in the tongue and under the chin healed, and the infiltration in the tongue and neck disappeared. The patient expressed great relief from pain immediately after the removal of the foreign body.

From the history of this case, and the other cases which have been briefly outlined from literature, it would seem that the physician should be on guard for the possibility of a foreign body in penetrating wounds of the tongue. In every case which has been referred to, including the present one, the foreign body was overlooked at the time of the accident and not discovered until some time later. Two of the cases proved fatal, so that the condition is a serious one, and from past experience, the removal of a foreign body of this character from the tongue should not be undertaken unless precautions are taken for possible hemorrhage. Again, the presence of a sinus discharging pus following an injury of this kind strongly suggests the presence of a foreign body. Several of these cases were carefully examined with a probe and yet the foreign body was missed. An x ray examination of these cases would probably be of great help as there is slight density to the tongue, and many of these objects, such as pipestems or metallic substances, would certainly cast some shadow, and thus aid in the diagnosis.

In conclusion, I felt that the case was interesting enough in itself to be reported, but the investigation of the literature on the subject has brought out the fact that foreign bodies in the tongue are not at all uncommon and that they are frequently under discussion; that they always cause more or less severe symptoms, and in some cases they have proved fatal.

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Pellagra*

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In reviewing the literature on pellagra which has appeared in the past several years, the most striking observation noted is the wide divergence of opinion regarding its etiology. Some authors are convinced that it is the direct result of the consumption of diseased maize, while others are equally as positive in their belief that it is due to the presence of colloidal silica in the drinking water, parasites, microorganisms, poor sanitation, dietetic deficiencies, etc. Each writer has presented his particular hypothesis in a most satisfactory manner and one is almost persuaded that the last theory advanced is the correct solution to the etiological problem until he reads another which is correspondingly convincing. Therefore, before accepting any hypothesis as conclusive, it would be well to analyze each one and eliminate those which cannot be proved by clinical or laboratory methods.

The Austrian and Italian governments took sufficient cognizance of the diseased maize theory to institute prophylactic measures which would prevent the milling and consequent consumption of affected maize by the inhabitants of their respective countries. The reports following the inauguration of these measures were sufficiently gratifying to inhibit other research into the etiology of pellagra until it was ascertained that the disease was prevalent in communities where maize did not form a part of the diet. Because of this discovery the maize theory was subsequently discarded and another substituted to the effect that the bite of the Buffalo gnat was the causative factor. Upon further investigation it was learned that this gnat did not inhabit countries wherein pellagra was endemic; therefore, this hypothesis met the fate of its predecessors and shortly thereafter it was announced that the presence of colloidal silica in the drinking water was the true cause of the disease. The soil of all pellagrous districts was then analyzed by chemists and when the reports were collected it was noted that pellagra occurred in regions where the soil and water were free from contamination by silica and that in those regions where silica was present, only a small percentage of the inhabitants were afflicted with this disease. Hence another theory had to be abandoned.

The theory that pellagra was due to the microorganism or parasite and was communicable gained considerable momentum when Harris laid claim to having transmitted the disease to a monkey. Since neither Harris nor any other investigator has been able to reproduce this experiment, it is reasonable to suppose that other factors which he failed to observe were responsible in this particular case. Moreover, it has been frequently commented upon that pellagra never occurs in prison guards, attendants or nurses connected with institutions where the

*Read before the Chattahoochee Valley Medical Association, July , 1924.

disease appears to be almost epidemic. This theory continues to have many adherents despite the fact that the evidence against its tenability seems overwhelming.

The circumstance that pellagra appears in districts where the sanitary conditions are superior to those districts where the disease is unknown, and also that pellagra continues to occur in districts where the sanitary conditions have been improved, would seem to eliminate the sanitary question as a possible factor in the production of pellagra.

To those who have had the opportunity of making close observations of pellagra, the theory advanced by Funk and the more recent experiments in dietetics carried out by Goldberger and his associates, appear to be the most nearly correct solution of the etiological problem thus far advanced.

In 1912 Funk called attention to the close analogy of the symptomatology of beriberi and pellagra, and stated that it was his belief that pellagra was due to a deficiency of vitamines in the food of those individuals so affected. Of this Goldberger has to say, "while much may be said in favor of this attractive theory, it still lacks demonstrative proof." In summarizing the results of his dietetic experiments, however, Goldberger states that the "exact dietary factor or factors constituting the specific pellagra producing fault is undetermined, but it is to be sought in some combination or combinations of the following: a, a physiologically defective protein (aminoacid) supply; b, a defective or inadequate mineral supply, and c, a deficiency in a yet unknown dietary essential (vitamine)," thereby acknowledging the possibility of the correctness of the theory advocated by Funk. In more recent articles Goldberger looks with greater favor upon a defective aminoacid supply.

In order to have a clearer conception of the theories advanced by Funk and Goldberger, it is necessary to examine into some of the more conspicuous facts associated with the occurrence of pellagra and note the apparent bearing they have on the etiological problem.

It has been stated that pellagra is a poor man's disease because of its predominance among the indigent members of society. The majority of cases which have been observed in this country are seen among the poor in the mill villages, institutions, and rural sections of the South, while the same peoples in the North, East and West have enjoyed comparative freedom from this malady.

The sectional difference in the appearance of pellagra is often explained by the fact that physicians residing in nonpellagrous districts are unfamiliar with the disease and fail to recognize the cases they come in contact with. This explanation is probably true in occasional cases, but cannot be accepted as the true explanation for the enormous disproportion of cases, therefore, it would be well to consider other factors.

The sanitary conditions of the institutions, mill villages, and rural sections of the south are not inferior to those of other sections and certainly not as bad as those existing in the larger cities of the east, north and middle west. The composition of the soil in the different geographical areas does not show any appreciable difference. The climatic conditions in the pellagrous districts is not unlike that of sections where the disease is unknown. Moreover, pellagra is rarely observed in the tropical, semitropical, and temperate zones of the countries to the south of the United States. The economic, occupational and environmental conditions appear to be very much the same in all sections, whether pellagrous or nonpellagrous. All other conditions, with the exception of diet and its preparation, are about the same in each section of the country.

Because of the large number of dairy and truck farms in the north, east and west, the poorer members of society in these sections have found that milk, fruits and vegetables, particularly when in danger of becoming overripe, are the cheapest foodstuffs to be procured and their diet has consisted largely of these articles of food. Despite the better climatic conditions in the south dairying and truck farming have not been followed to any extent until within very recent years and the poor people of this section have limited their diet to molasses, corn bread and salt pork. The cost of fuel in the north, east and west has influenced the inhabitants to cook their food for the shortest possible time, but in the south it is an almost universal custom to cook vegetables for several hours.

Therefore, it may be stated that the dietary of the poorer classes in the nonpellagrous districts is rich in water soluble vitamines which are not extracted by cooking and that the dietary of the same classes in the pellagrous districts are either devoid of the water soluble vitamines or else they are extracted in its preparation for consumption.

The dietary of the better classes in the pellagrous districts contains larger amounts of water soluble vitamines and therefore they are seldom afflicted with this malady, except in those persons who have a pronounced psychic aversion to vitamine containing foods.

It has been noted that the acute exacerbations of pellagra are most often observed in the spring or early summer months, which is most suggestive, since vitamine containing foods are harder to procure in the winter months. Then, too, the provender of cows is short of vitamines except in the dairying districts where silos are used, and this has a tendency to impoverish their milk. The fact that truck and dairy farming has increased, that the economic conditions have improved, and that a noticeable subsidence of pellagra in the south has occurred within the past few years, may be considered significant.

Other significant observations favoring the theory that pellagra is due to lack of water soluble vitamines which may be cited are, a, the comparative freedom from pellagra of the members of the Jewish faith, whose religion insists upon kosher food, which is vitamine containing; b, the absence of pellagra in European countries during the war when many subsisted on raw vegetables and were unable to procure meats or other foods rich in proteins; c, the slight predominance of the disease in females whose habits are not as roving as those of the male, whose occasional visits away from home give him an opportunity to partake of fruits or vegetables, and d, the fact that a marked diminution of the disease appeared in those institutions where Goldberger and the Thomson-McFadden Commission had vegetables added to the dietary.

I have had occasion to observe twenty-eight cases of pellagra within the past five years, in which the only treatment consisted of the addition of tomato juice, raw cabbage, lettuce, and the water in which vegetables had been cooked (colloquially known as "pot liquor"), to their daily diet and a recovery was recorded in each case. The time required for a complete abatement of all symptoms varied from three to sixteen weeks, depending upon the advance of the disease. The slowest to recover presented a rather well marked psychomotor retardation, slight amnesia, and complained of intense headaches in addition to the more familiar symptoms of the disease. It was noted that each patient had previously subsisted on a vitamine free diet and had a marked aversion to the foods prescribed. Dr. W. H. Hailey, of this city, has had occasion to treat three acute cases by this method within the past year and reports that each patient recovered within three weeks.

The symptomatology of pellagra and its close analogy to beriberi, polyneuritis, and other similar conditions, show it to be primarily one of the neuritides and the subsequent mental symptoms are secondary to the involvement of the peripheral nervous system. There have been many types or clinical forms of nervous and mental disturbances accredited to pellagra, by various writers, wherein certain clinical symptoms predominated and this has led to a confusion of the symptomatology of the disease and caused many erroneous diagnoses. It should be borne in mind that pellagra, like many other diseases, may be associated with any neurosis, psychoneurosis or psychosis without having any specific relation to them. The true pellagrous psychosis has many psychic symptoms in common with those presented in Korsakoff's psychosis. Those cases which have been described as presenting symptoms of dementia precox, manic depressive psychoses, anxiety psychoses, etc., are probably coincidental and have no direct connection with pellagra.

The pathology of pellagra has never been definitely worked out, but there is reason to believe that in the well advanced cases the lesions are by no means confined to the peripheral nerves and that there is a general involvement of the entire central nervous system.

In view of these observations, it would appear that Funk was correct in his theory that pellagra is due to a deficiency of vitamines in the foods of those so affected. And since there is a complete subsidence of all symptoms of the disease when the patient is placed upon a diet rich in water soluble vitamines it would seem that the particular dietary factors constituting the specific pellagra producing fault is an inadequate supply of the antineuritic vitamine B, with the lack of the antiscorbutic vitamine C playing a contributory rôle.

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Carbon Monoxide and Dioxide

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Carbon monoxide is a colorless, tasteless and practically odorless, nonirritating gas which is generated when insufficient oxygen is present during combustion to convert all of the carbon into carbon dioxide. Carbon monoxide is always present in illuminating gas.

"The proportion of carbon monoxide (1) differs greatly in domestic and industrial gases, varying between four and thirty per cent; in coal gas four to ten per cent, and thirty per cent in water gas, and twenty to thirty per cent in producer gas. Lime kiln gases, waste gases from ammonia soda processes, and gases left in the track of explosions in coal pits contain from 1.25 to 2.5 per cent. (2). Wood gas made by the Wilkinson process was found to contain 3.75 per cent., while the commercial gas served to the consumer and made by mixing gases from wood, coal and naphtha, contain 11.25 per cent. (3). Almost all illuminating gas contains a large proportion of water gas, so that when this gas is discharged into an inhabited space it becomes exceedingly dangerous. An atmosphere containing two tenths per cent is capable of destroying life (4)."

In burning buildings, poorly ventilated garages, and in similar situations, the concentration of the gas may be from one part in one hundred up to a fairly high percentage, and when present will overcome a human being, and in high concentration, sometimes with a single breath. Its immediate effect is loss of muscular power and later unconsciousness.

Carbon dioxide is a colorless, suffocating, acidulous gas and occurs wherever there is combustion. When in high concentration, it causes spasm of the glottis, insensibility and death from suffocation. In low concentration, dizziness, somnolence and loss of muscular power.

These two gases, carbon monoxide and dioxide, are always present where rapid combustion is taking place, as in burning buildings, and in garages where motors are allowed to run. It is the presence of

these gases in concentrated form that accounts for the fact that able bodied, athletic young persons are unable to escape, even when a point of exit is readily accessible, as illustrated in the following.

At a recent fire in Brooklyn, when a building occupied by three families, consisting of sixteen persons, was burned, six of the occupants were found dead. One was a young man, nineteen years of age, whose unburned body was found near an unlocked, closed window, which gave access to a point of safety.

In another instance of a fire, the unburned body of a man, his lips covered with soot, was found in a toilet, a distance of twenty-five feet from the actual blaze. This toilet room contained a window which led to safety. The man had a contusion over the nose and forehead, but at autopsy these injuries were found to be trivial. Examination of the blood in both cases showed carbon monoxide to be present.

The following serves to illustrate not only the muscular weakness, but also how the trained mind failed to act in an atmosphere containing carbon monoxide in excess.

Dr. M. E. Marten, assistant medical examiner in Brooklyn, and the writer were called to a bungalow in Sheepshead Bay one extremely cold day three years ago, and found four persons dead. The house consisted of a flimsy, four room, one story structure, with all the windows hermetically sealed to keep out the cold. The living room was heated by a gas heater of the radiant type. There was no gas escaping and the heater was still burning when the tradesman called in the morning to get the orders for the day. The occupants of the home were a woman, who had been delivered of a baby the day before, the new born babe, a four year old girl, and the trained nurse. The baby was found in its basket on a table in the living room. The mother and her four year old daughter were found in bed. The nurse had left her bed and gone to the mother's room and there collapsed. She was found in a kneeling position with the upper part of her body lying face down on the bed. Had her mind functioned properly and her power of locomotion remained, she doubtless would have opened a window and saved them all. Analyses of the blood, by Marten, showed carbon monoxide to be present.

To illustrate the paralyzing effect of carbon monoxide on the muscles, and as evidence that it precedes the unconsciousness, the following case was related to the writer by the late Charles Wuest, senior medical examiner of Kings County, Brooklyn.

A pedestrian, while walking along Bushwick Avenue, Brooklyn, one cold day in February, many years ago, noticed a coach passing, the windows of which were covered with steam, and a face with staring eyes, pressed against one of the windows. He called to the coachman to see what was the matter with his fares. The driver got down from the box, opened the door, and tried to arouse his four passengers, who were all sprawled out in their seats, but was unsuccessful. He then drove to Dr. Wuest's office, which was around the corner. Wuest in turn tried to arouse by calling and shaking, but as they did not respond, the doctor, aided by the coachman, lifted them out of the coach, placed them on the sidewalk, and in a short time was able to revive them. The doctor then questioned as to their sensations and how it happened. They all agreed they had heard both the doctor and the coachman call but had been unable to move because their muscles failed to respond. They stated that on the way to the cemetery they had had a window of the coach open, but on returning, as they were cold, all the windows of the coach had been kept closed and a charcoal foot warmer used to supply heat.

As the victims in this case were able to describe their sensations, the instance bears out the present knowledge as to the paralyzing effects of the carbon oxides on the muscles, and to my mind, proves conclusively that paralysis precedes unconsciousness. The cited cases readily explain why we find young adults unable to escape from fires, though near points of exit.

This article is written so that the medical witness may, when giving his opinion, explain the cause of death in these types of accidents and account for the injuries found; as due to falling from sudden paralysis of the muscles, rather than infer them to be of homicidal nature.

The following tests for the detection of carbon monoxide in the blood, as given by Hawk (5), have been found to be practical, and the most delicate, by William W. Hala, chief pathologist of the Kings County Laboratories.

Tannin test for the detection of carbon monoxide hemoglobin: Divide the blood to be tested into two portions, and dilute each with four volumes of distilled water. Place the diluted blood mixtures in two small flasks or large test tubes and add twenty drops of ten per cent solution of potassium ferricyanide. First, allow both solutions to stand for a few minutes, then stopper the vessels and shake one vigorously for ten to fifteen minutes, occasionally removing the stopper to permit air to enter the vessel. Second, add five to ten drops of ammonium sulphide (yellow) and ten c. c. of a ten per cent. solution of tannin to each flask.

The contents of the shaken flask will soon exhibit the formation of a dirty olive green precipitate whereas the flask which was not shaken and which therefore, still contains carbon monoxide hemoglobin, will exhibit a bright red precipitate, characteristic of carbon monoxide hemoglobin.

This test is more delicate than the spectroscopic test and serves to detect the presence of as low a content as five per cent. of carbon monoxide hemoglobin.

1. This transforms the oxyhemoglobin into methemoglobin.

2. This is done to free the blood from carbon monoxide hemoglobin.

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Report of a Case of Pertussis Complicating a Gastric Ulcer*

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The occurrence of whooping cough in a patient with a gastric ulcer is an altogether rare occurrence, as far as one may judge from the apparent lack of any reference to it in the medical literature of the disease. The following case report is not made for that reason only, however, but also to call attention to the effect that alkali therapy seemed to have had in aborting the disease.

Case.—A woman, twenty-three years of age, was admitted to the Kingston Avenue Hospital on July 19, 1922, with a diagnosis of whooping cough. Her family history was irrelevant. She had had a severe attack of scarlatina when a child with complications of otitis media, cervical adenitis and nephritis. Later, at the age of seven and eleven years she had had two separate and distinct attacks of whooping cough, likewise pneumonia twice, at the age of nine and sixteen years. There was also a vague history of several mild attacks of rheumatic pains. At several times since the complicating nephritis during scarlet fever, she had been troubled with edema of the face, hands, and feet and with visual disturbances. Since she was five years of age the patient had suffered at intervals from epigastric pain, especially after eating, with vomiting of all but the most simple foods, such as bread and milk, and occasionally the vomitus would be streaked with blood. Her present illness began at the end of May, 1922, with the return of marked epigastric pain after eating and incessant vomiting, with hematemesis. This was followed by the development of edema of the feet and marked constipation.

The patient was admitted to the Jamaica Hospital on June 30th, and a diagnosis of gastric ulcer and chronic nephritis was made. While under treatment at that institution a coryza and cough developed in the early part of July followed about July 15th by a paroxysmal cough of a severe type with whooping and vomiting, congestion of the face and the terminal expectoration of a very tenacious mucus. With each coughing spell, the epigastric pain became indescribably severe.

A physical examination of the patient on her admission to the hospital showed her to be fairly well developed and nourished. She appeared acutely ill and depressed, complaining of weakness, epigastric pain, paroxysmal cough with whooping and vomiting. The respirations were rapid, she was slightly dyspneic, cheeks flushed; the temperature was 99.4°, the pulse 80, and the respiration 34. At frequent intervals, averaging every half hour, there were severe paroxysms of coughing lasting about sixty seconds, accompanied by the vomiting of blood stained vomitus and the expectoration of thick tenacious mucus. During the paroxysms the patient presented a most distressing sight with her hands pressed tightly against her abdomen, and beads of perspiration standing out on her face which would become quite cyanotic. After the paroxysm she would throw herself back again into a recumbent position as she felt another paroxysm supervene.

General physical examination of the chest was negative, but the abdomen showed a small area of acute tenderness about the size of a fifty cent piece in the epigastric region just to the right of the median line, near the costal margin. The urinary examination showed a moderate trace of albumin, acid, specific gravity 1004, a moderate number of epithelial and pus cells, and a few red blood cells. A blood count was reported as total red cells 3,020,000; total white cells, 11,000; polymorphonuclears, 63 per cent.; small lymphocytes, 30 per cent.; large lymphocytes, 7 per cent.; eosinophiles, one per cent.; hemoglobin, 80 per cent.

CLINICAL COURSE AND PROGRESS

On July 21st the patient was placed on Sippy's dietary treatment for gastric ulcer, hourly feedings of milk and cream. She was also given a mixture consisting of antipyrine gr. five, sodium bromide gr. five and tincture of belladonna min. five every six hours. Leucocyte extract, three c. c., and mixed pertussis vaccine min. ten were given subcutaneously on July 22d and the same dose on July 25th. An abdominal binder was applied and careful records kept of intake and output of fluids. A record of the paroxysms was kept by the patient who was provided with a paper and pencil for the purpose.

There was no improvement from the time of admission until July 26th, the number of paroxysms ranging between forty and forty-four in twenty-four hours, and increasing in severity. On July 25th the treatment was changed as the vomiting was very marked. Cream was omitted from the diet and whey and albumen water were substituted with a little lime water and cracked ice at intervals. Aklaline powders as follows were given: Powder No. 1 consisting of magnesium oxide gr. ten and sodium bicarbonate gr. ten in one powder, alternating with powder No. 2, consisting of calcium carbonate gr. ten and sodium bicarbonate gr. twenty given every other hour from 7 a. m. to 9 p. m. On July 27th all the depressants ordered, including antipyrine, belladonna, and sodium bromide, were discontinued. The vomiting continued, but only one paroxysm occurred. Powders were given now every two hours, alternately. On July 28th, the paroxysms stopped. Vomiting had diminished, and the powders were given alternately every four hours. On July 30th the powders were discontinued. There were no further paroxysms, but the vomiting continued. On August 1st, the paroxysms returned, but were not as frequent or as severe as previously. The alkaline powders were started again, alternately every two hours. On August 3rd, seventeen paroxysms occurred between 3 p. m. on August 2nd and 3 p. m. on August 3rd, and on August 5th the paroxysms had disappeared again. On August 12th it was reported that there had been no paroxysms since August 4th, and no vomiting since August 6th. The patient looked well

*From the Kingston Avenue Hospital of the Bureau of Hospitals, Department of Health, New York City.

and was comfortable, and had been up and around for a week. The epigastric pain after eating had virtually disappeared, but there was still a point of slight tenderness in the same localization.

The patient was seen subsequently, about the middle of October, and stated that the cough had never returned but vomiting and epigastric pain had reappeared. She was referred to the general hospital again for treatment of the gastric ulcer.

The remarkable cessation of the severe paroxysms from forty-four to none in three days of alkaline treatment was striking. Likewise the return of the paroxysms after the powders had been discontinued for three days and their final disappearance for the second time after resuming alkaline therapy are facts which seem to suggest a new line of thought in the therapy of pertussis.

SUMMARY

The development of pertussis of a malignant type in an adult patient with a gastric ulcer is a rare occurrence. I could find no previous instances recorded in the literature. The remarkable effect of alkali therapy in shortening the course of the disease offers possibly a new line of thought in the pathogenesis and therapy of pertussis.

The Significance of Enlarged Glands in the Neck

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The cervical lymph nodes share in many of the local inflammations about the neck and head. They are also brought into sympathetic enlargement in general systemic affections involving the lymphatic tissue in other parts of the human economy. In many instances the etiological factor for their involvement is apparent and easily explained, while in others it is more obscure and difficult to determine. Enlargement of the cervical lymph glands is of frequent occurrence, especially in children, yet it seems to have received little attention.

The etiology for cervical enlargement may be regarded in general as falling into the following three classes: 1. Inflammations: a. Simple, following infection of the tissues about the head and neck, thus being secondarily implicated. This variety may be acute or chronic. b. Tuberculous. 2. Those enlargements occurring in connection with general affections. These may be divided into: a. The involvement of the lymph nodes in the acute infectious diseases, e. g., scarlet fever, measles, German measles, diphtheria, etc. b. Those conditions in which there is an affection of the general lymphatic system, e. g., syphilis, leucemia and Hodgkin's disease. 3. Neoplasms: a. Primary, such as lymphosarcoma. b. Carcinoma as a secondary process.

The most common forms of enlargement of the cervical glands are the acute local, infectious processes, the enlargements being secondary to bacterial invasion of structures of the head and neck and particularly of the nose and throat, the lymphatics of which terminate in one or another of the groups of lymph nodes. The etiology of primary involvement of the superficial glands is as a rule easily discernible. Knowing the area drained by a particular set of lymph nodes careful search will disclose the original seat of trouble. On the other hand this is oftentimes a difficult matter, for the stage when the more superficial glands are involved is easily overlooked. Knowing that the deeper glands which present the more conspicuous enlargement receive lymphatic vessels from a number of sources the original focus of infection is not so apparent.

The etiology of enlargement of the superficial glands may be outlined as follows: Lupus, eczema, pediculosis, furunculosis, arising in the posterior part of the scalp will cause enlargement of the occipital group. The same conditions about the ear, and particularly an external otitis either circumscribed or diffuse, will produce enlargement of the posterior or preauricular nodes. Sores about the alæ nasi, fissures and cracks about the nostrils and corners of the mouth, and infections of the tongue surfaces, especially in the various forms of stomatitis, will produce enlargement of the submaxillary and facial glands. Similar conditions about the chin and lower lip will affect the submental glands. Pyogenic infection of the gums and periosteum produces enlargement of the submaxillary group. Carious teeth *per se* do not affect the lymph nodes. It is only when the gums become eroded or the bones about the roots are infected that lymphatic involvement is noted (1).

For enlargement of the retropharyngeal glands we look to infections of the nose and throat and particular stress should be laid upon the adenoid tissue in the vault. The superior deep cervicals are invariably affected simultaneously, the involvement of these glands oftentimes giving us a clue to the existence of a swelling on the postpharyngeal wall. We recently reported a series of sixty cases of retropharyngeal abscess (2) in which practically all the cases showed original trouble in the nasopharynx. Pinches (3) found that a purulent rhinitis preceded fifty per cent. of all cases of retropharyngeal abscess.

In those patients who present enlargement of the superficial cervical glands without any gross pathological focus we should always suspect pediculosis capitis. This is one of the common causes for such lymphatic involvement in both children and adults. Even in the best of families where children receive the utmost care this condition prevails (4).

It can readily be seen that the affections causing enlargement of the superficial cervical glands are not of a very serious nature; they are transient and usually amenable to treatment. However, it is a different matter with the deeper glands. Their in-

volvement ordinarily signifies a more severe infection; they persist over a longer period of time and are often accompanied by some systemic disturbances. According to Wood (5) the importance of the nose, throat and mouth as the starting points for cervical adenitis is paramount and he regards this as being the source in ninety per cent. of cases. From our experience we feel this is not an overestimated figure. Likewise according to Müller (6) the structure of first importance is the faucial tonsil, next the pharyngeal tonsil and other lymphatic structures of the pharynx, including the lingual tonsil, then the gums and alveolar processes and lastly the nasal cavities and accessory nasal sinuses. Gardiner (7) places the responsibility for cervical adenopathy on the faucial tonsils at eighty per cent. of chronic cases. Sutcliffe (8) attributes the great frequency of cervical adenitis in children to the coincident tonsil infections which are so prone to occur in childhood. There is no question that the tonsil is the great portal of entrance in the acute as well as in the chronic adenopathies. The opinion is certainly a scientific one and is based upon experimental facts and clinical evidence. The faucial tonsil is of prime importance chiefly because of its size and depth of its crypts. Furthermore, the tonsil is exposed to a continuous contamination from a rich flora of bacteria ever present in the oral cavity. The histological arrangement in the tonsillar crypts is such that little defense is afforded to invading microorganisms. The peculiar disintegeration of the basal cells and their lack of cohesiveness makes necessary only a slight abrasion of the superficial cells before the parenchyma of the tonsil itself is open to invasion.

Considering the acute adenopathies resulting from nose and throat infections we must recognize the fact that in all these cases there are present some evidences of the original affection. These patients are taken sick with an acute follicular tonsillitis, or an acute rhinitis, or an acute rhinopharyngitis. A day or two later there appears an enlargement of one or more of the cervical glands, usually the superior deep cervicals located beneath the sternomastoid muscle. Typical in cases where the faucial tonsil itself is affected we note an enlargement of at least one particular node located at the junction of the anterior border of the sternomastoid and posterior belly of the digastric. This mode was first described by Wood and designated by him as the tonsillar node. It receives directly the lymphatic drainage from the faucial tonsil.

These deep cervicals vary in their enlargement. As a rule they are moderately enlarged so that they are easily palpable. A characteristic feature very often in these acute cases is the tenderness elicited upon palpation. Their enlargement contributes partly to the hyperpyrexia. They seldom suppurate under these conditions although in children such an unfortunate event is not rarely seen. The enlargement does not persist over a long period and resolution is practically commensurate with subsidence of the original inflammation of the nose and throat. However, the cervical enlargement may persist for some period after the patient has recovered from his tonsillitis.

The involvement of one or two glands, followed by resolution after a short time, represents the usual case and the usual sequence. However, there is one type of case acute in nature in which there seems to be a more general involvement of the glands; in which the condition persists over a longer period; where the glandular affection overshadows the original nose and throat infection. We here refer to the socalled more or less obsolete term glandular fever, first described by Pfeiffer in 1889. We cannot share his opinion that the condition is an infectious and specific disease occurring as a distinct entity. The fact that it is seen in epidemics is no added proof, for those holding the opinion that the glandular enlargement is purely the result of a preceding local throat inflammation point out that the latter as a forerunner is responsible for the epidemics reported by so many observers. Pfeiffer himself admits that in many cases there is present some evidences in the nasobuccopharyngeal mucous membrane of previous infection. And then in the light of the more recent clinical and experimental data organisms may gain entrance through the surface epithelium with little change in the latter structure. Manning (9) reported a series of thirty such cases of acute cervical adenitis and found that all of them occurred during the early fall when acute respiratory disturbances are prone to occur. All of them had previous acute infections of one form or another of the pharynx.

This condition is most often seen in children although adults are not exempt, as has been shown by the reports of Schaffer, Botschowsky, Korsakoff and others. After several days during which there are evidences of some nose or throat infection, such as catarrhal or follicular tonsillitis, or cough or sneezing or nasal discharge, there is noted increasing pyrexia and enlargement of the deep cervical glands located beneath the sternomastoid muscle. The glands are discrete. The skin is not reddened and the tissues are not edematous. Commonly the cervical enlargement is unilateral at the outset. The glands as a rule are not tender and there is absence of pain. The patient is restless; there is anorexia, furred tongue, and the pulse is rapid. In children especially the systemic disturbances are more profound. The condition persists usually from one to two weeks after which there is a gradual drop in the temperature as well as a diminution in size of the glands. The latter, however, may remain palpable for weeks after the temperature has reached normal (10).

We have so far discussed the nonsuppurative variety of cervical enlargement and there now remains for consideration the acute suppurative form of cervical lymphadenitis. This type requires very little comment for the condition is a fairly common one and usually recognized. Its occurrence is most often seen in young children, under two years of age. The infection originates in the nose and throat. There are symptoms of the original inflammation such as rhinitis, nasopharyngitis, or tonsillitis. There is present pyrexia of a fluctuating character, the children are restless and the glands rapidly enlarge —very often making enormous swellings in the neck. There is redness of the skin, tenderness of the enlarged nodes, and the evidences of breaking down are apparent very early. Softening and fluctuation

are noted in about two weeks. The difficulty is to determine during the first few days, in which cases the glands are going to break down, and in which they are going to resolve. At the very onset this cannot be done with certainty. If the fever persists and is high, if the glands reach a large size early, then there is likely to be suppuration.

The question of chronic enlargement of the cervical glands is a rather large one. It will therefore necessitate our touching only upon the more important features of this subject. To begin with the chronic enlargement may be simple or tuberculous or it may be a combination of both, the latter being superimposed upon the former (11). Most observers are agreed that in both instances the original source of infection is to be looked for in the tonsils and especially is this true in those cases where no other gross pathological lesion can be demonstrated elsewhere in the nose and throat. The size of the tonsil makes no difference as to its infectivity except that the small submerged fibrotic type is apt to be more dangerous. That enucleation of the tonsil in such cases will cause subsidence of the glandular enlargement is a well established clinical fact and can readily be understood when we recall that the superior deep cervical glands drain the tonsil directly. Pathological examination by Willis (12) of two hundred and thirteen tonsils revealed cryptic concretions in one hundred and fifty-four; socalled abscesses in thirty, and pericryptal inflammation in one hundred and sixty-five. Waugh (13) considers chronic gland enlargement in children as due to tonsillar infection. He reports one hundred and thirty-five cases in which radical removal of the faucial and pharyngeal tonsils was rewarded with complete recovery.

We now come to those cases of cervical adenitis in which the tubercle bacillus plays an important rôle. Recently much experimental, clinical, and pathological data have been collected so that we now have definite and authentic matter upon which to base our opinions. Woods found that after inoculation of the tonsil surface in hogs, with a bouillon culture of tubercle bacilli, the organism was regained from the regionary lymph nodes before any pathological lesion could be detected in the tonsil. Willis reports after a careful macroscopical and microscopical examination of two hundred and thirteen tonsils removed from one hundred and eight patients, five per cent. showed distinct evidence of tuberculosis. Tybus believes that the tonsils when chronically diseased are tuberculous in many instances and he calls attention to the fact that the small submerged tonsil is the type apt to harbor tubercle bacilli. The susceptibility of the tonsil to tuberculosis is further substantiated by the pathological findings in human tonsils. In a series of one thousand and seven hundred and fifty-nine cases reported by twenty-six different observers tuberculosis was found in about five per cent. Mitchell (14) found that of the tuberculous species eighty-eight per cent. were infected by the bovine bacillus and twelve per cent. by the human bacillus.

It is therefore agreed that the cervical enlargement may be caused purely by the ordinary infectious organisms or it may be the result of infection by the tubercle bacillus. This therefore brings us to a consideration of the differential diagnosis of chronic simple and chronic tuberculous adenitis. This is very often a simple matter and at other times a more difficult one. The points that may help us to arrive at a conclusion in the doubtful cases may be briefly put down as follows: 1. A cervical adenitis in a child under two years is likely to be simple rather than tuberculous. Over two the reverse is more apt to be true. 2. The family history is of the greatest importance when we know that members of the family are tuberculous subjects. 3. The onset in the pyogenic type is sudden and rapid whereas in tuberculosis it is likely to be slow. However, in tuberculous adenitis in early infancy there is a picture described greatly resembling that of the acute pyogenic type, e. g., rapid enlargement, fever, tenderness, edema and matting together (15). When the condition persists over three months the enlargement is presumptively tuberculous. It may not be so however. 5. The location of the nodes may be the same in both cases. A single slowly enlarging gland, particularly if it be the tonsillar node, is in favor of tuberculosis. 6. In the pyogenic variety the swelling is larger, comprises more lymph nodes, has more perinodular infiltration, is tender, reddened and all the tissues are bound up in the swelling. In the early stages of tuberculosis these features are all lacking, but in the later stages there are just as many glands involved and they may be matted together and adherent to the skin but redness, tenderness and heat are rarely present. 7. The Von Pirquet reaction may also be an aid and especially if it is positive in children under five years of age. Then finally it may be concluded that the only final and positive method of making the diagnosis is by biopsy.

Many of the acute infectious diseases are accompanied by enlargement of the cervical glands. The involvement is essentially acute; the glands are only mildly involved as a rule and there are associated the signs and symptoms of the primary diseases. The diagnosis is therefore not a very difficult matter. In scarlet fever the deep cervicals are enlarged and may progress to intense infiltration and may even suppurate. The enlargement in diphtheria is also acute. Glandular involvement is often a notable feature in this disease. With the appearance of a membrane in the nose or throat the diagnosis is reasonably certain. In measles the eruption and the other attending symptoms serve to explain the cervical enlargement. In those cases where the glands enlarge days or weeks after may cause some confusion especially if the occurrence of a previous rubeola be unknown. In German measles the glands may be misunderstood until the rash appears. The mildness of the involvement coupled with the transient character of the enlargement makes the diagnosis easy.

The cervical adenopathy in syphilis is a part of a general involvement of the lymphatic system affecting the liver, spleen, inguinal and epitrochlear glands. Confirmatory evidence may be offered as a result of a positive Wassermann and the attending splenic and epitrochlear enlargement.

Then a history of a primary lesion or that of miscarriages, stillbirths or early deaths may aid in arriving at a diagnosis. The characteristic group involved in the neck is the posterior cervical. The nodes are discreet, with absence of inflammatory signs and

without being adherent to adjacent structures. No focus of infection can be discovered. If such nodes be excised they may show the spirochetæ pallidæ.

Hodgkin's disease may present a clinical picture at the onset which may be confusing. In Hodgkin's disease the cervical glands may be the first to become affected and oftentimes associated with some temperature. However, the constant and progressive enlargement with coalescing and without a tendency to suppurate will help to distinguish the condition. Furthermore, with the involvement of additional nodes, remote from the lymphatic system in the neck, particularly those within the thorax and abdomen, will also help to make a diagnosis. This will be made even more definite with the characteristic progressive anemia, and finding typical Hodgkin's hyperplasia upon section of a removed gland.

Of the leucemias the acute lymphatic form is the only one in which a cervical enlargement may need differentiation. In its early stages it presents enlargement of nodes up to a walnut size, discrete with little or no redness or tenderness. When hemorrhagic changes take place in the mouth and throat, infection is often superimposed upon the picture. The diagnosis will be made by the examination of the blood; anemia with one to three million red blood cells; hemoglobin of twenty to thirty per cent., and leucocytes from fifty to one hundred and fifty thousand, of which ninety to ninety-eight per cent. are lymphocytes. With this blood picture the diagnosis is simple.

Under the neoplasms that primarily involve the lymph glands the commonest form is the lymphosarcoma. Occasionally the cervical glands are the seat of this malignant growth. The process tends to spread locally and the glands enlarge very rapidly. The affection is unilateral rather than bilateral. There is a great tendency toward ulceration, but caseation and suppuration never takes place. Death occurs as a result of pressure, hemorrhage or cachexia. Internal metastasis to the liver and lung occur early, but involvement to other groups of superficial lymph nodes is unusual. Pathological examination of an excised gland definitely determines the diagnosis.

Secondary involvement of the cervical lymph nodes in malignant disease of the structures of the head and neck is common. In carcinoma of the larynx, the jaw, the tongue, the tonsils, the pharynx, and the esophagus, we have secondary carcinomatous involvement of the regionary lymph nodes. In all these conditions the diagnosis offers little or no difficulty since the original seat of trouble is so apparent.

The author's references will appear in his reprints.

Heterotopia of Central Nervous System in Relation to Malformation of Body Segments and Nervous Diseases

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(*Continued from page* 332)

A. Bittorf's tables are overwhelming with proof of the effects of these anomalies, variations and embryonic malformations as predisposing factors not only towards tabes dorsalis, but also towards almost any nervous or other disease (56). Sibelius cites, Anomalies (of the spinal cord), in which degenerative signs possess the main worth for pathology" (57).

Church and Peterson illustrate the multaneous occurrence of syringomyelia and curve of the spine in two stances (58). In a third they illustrate the simultaneous occurrence of ringomyelia, heterotopia and bilateral symmetry of the spinal cord with citaons from Brissaud and Bruhl (59). ischel described and illustrated the multaneous occurrence of heterotopia, d curvature of the embryonic axis 50). The displacement of Clarke's column in our paralytic cases cannot be dependent on local pathological processes, but is connected with the series of phylogenetic anomalies (61). Clarke's column is at the base of the posterior horn on its inner side (62). The paths of conduction of vasometer reflexes are in the posterior horns of the side opposite (63). In regard to comparison of SGR variations in humans with those of beasts, we must absolutely concede that the lower forms which show a tendency to curve or spiral formation possess models in beasts, therefore the variations are in phylogenetic age direction (64). Nutrition of all tissues is controlled by the spinal ganglia (65).

The spinal ganglia lie in the intervertebral foramen. The sympathetic or vasomotor nerves are practically the visceral branches of the spinal nerves (66). Narrowing of the intervertebral foramen cannot occur without influencing the intercostal nerves (67). Bachman measured the intervertebral foramen and found it narrow in scoliosis

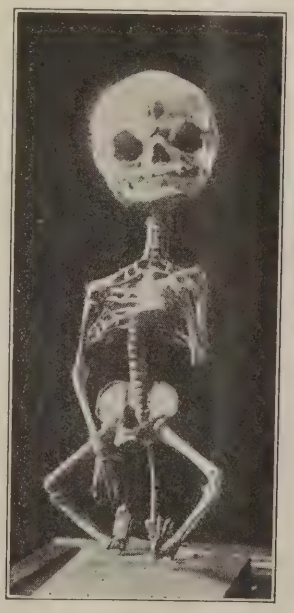

FIG. 13.—Newborn child's skeleton in Wistar Institute.

The remarks of Ivan van Gieson in *Artifacts of Central Nervous System*, do not apply to our insections, for he first removed the cord, thus juring it by making artifacts, while our transecms were cut in situ, after decalcifying the vertebae and imbedding them in paraffin, so that the ngenital deformity of the cord and vertebrae re both preserved.

FIG. 14.—Photograph by Mr. Erwin Faber of a moderate degree of kyphoscoliosis, laborer's spine, followed by lipping, thickening of the anterior common ligament, spondylitis deformans, rheumatoid arthritis of the heads of the ribs, narrowing of the intervertebral foramina, pressure and infections of the nerve trunks, atrophic cirrhosis of the liver, in other words, first curvature, later fibrositis of vertebræ, nerves and organs appended.

(68). "The sympathetic nervous system, then, when its normal action is disturbed, is the chief cause of the symptoms of disease" (69). Anomalies are equivalent to true diseases by the pernicious influence which they exercise on the organization (70). It is true that they can be the cause of each other (71). "The malformations precede the diseases," (in the embryo) (72). Of morbid agents not peculiar to the embryo, in the embryo we call them teratogenic, in the fetus and adult they are called pathogenic, but there is no sufficient reason for supposing that they differ one whit (73). The embryo tectonic curves become thus a criterion of the normal or abnormal character of this or that particular embryo (74). The study of pathological evolution should be sought as that of physiological evolution, in the true cause working morbid phenomena of the central nervous system or similar analogue which governs the higher movements of the organism (75).

PLACE OF LEAST RESISTANCE (LOCUS MINORIS RESISTENCIA)

The phenomenon of scoliosis should be considered universal (76). Axial anomalies are almost always accompanied by some deviation of structure in the appended parts (77). Variations are universal (78). Bilateral asymmetry is universal (79). Therefore all three are often if not usually dependent on a similar cause, i. e., the embryo tectonic curves of Boujard; or some similar curve and malformation of body segments occurring in adults causing cramped or distorted position of the torso. Further, as the variations or asymmetries are practically universal, according to three authorities, how could disease develop at any part of the body which had not previously varied from the normal, when most if not all parts do vary? With the exception of certain well known external forces such as trauma, which make a place of least resistance, a locus minoris in situ, the skin, e. g., not being adapted to resist the strain, the bacterial and other morbid agencies would find difficulty in developing at, or even in finding a part which had not already varied in an "opposite," i. e., nonadaptive direction.

So, "the nine hundred and ninety with unfortunate congenital variations are extinguished" (80), by disease growing thereon.

A very complete bibliography will appear in the author's reprints

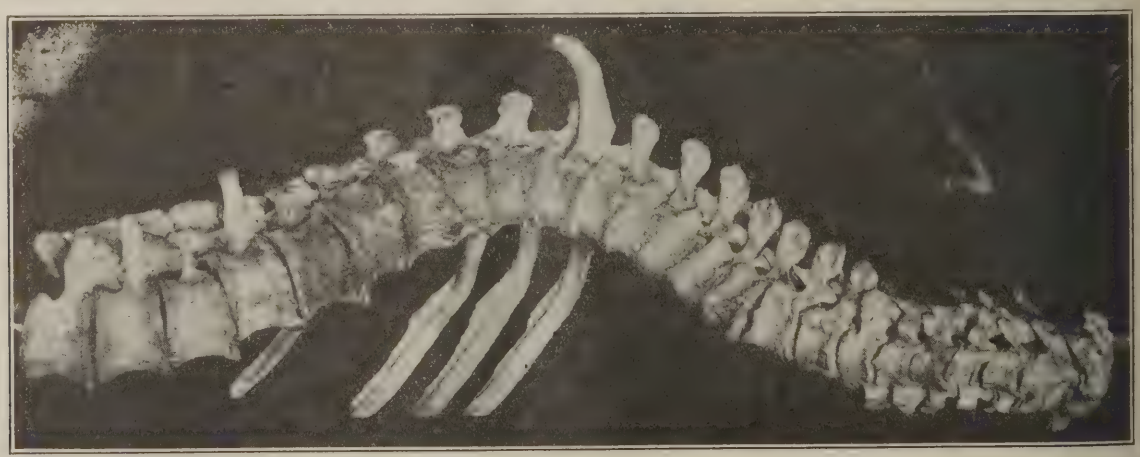

FIG. 15.— Lateral view of spine with a moderate degree of kyphoscoliosis, shown in Fig. 14.

Practical Therapeutics

THERAPY OF THE NONSPECIFIC PROTEIN REACTION*

Observations Based on the Intramuscular Injection of Venom Protein (Crotalin) Solution in Six Hundred Cases

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For three decades and up to eight or ten years ago, specificity in medicine, i. e., the idea that resistance of the body to disease depends on biological reactions essentially specific, was so firmly inculcated by medical and laboratory teachings that my early reports (1), 1910-13, as to certain clinical results and laboratory findings following biological reactions, produced by intramuscular injection of venom protein (crotalin) solution, received little investigation to substantiate or disprove their value. Not longer than seven or eight years ago the suggested use of protein injections or the production of a nonspecific reaction brought forth caustic editorial denunciation and clinical results reported met with skepticism and were said to be "accidental or temporary." Criticism resulted largely from lack of knowledge concerning the mechanism of the nonspecific reaction.

Today, immunologists recognize nonspecific therapy as a possible factor in resistance to disease and some investigators, Much (2) for instance, writes, "Nonspecific resistance is of a greater importance to the organism than are the specific forces."

Wright, who introduced the opsonic index as a means of estimating the specific response on the part of the patient, wrote in the *Lancet* in 1919, "We should discard the confident dogmatic belief that immunization must always be strictly specific." He points out that immunization by nonspecific inoculation—"collateral immunization" as he terms it, is often of value.

Kolmer, in the third edition of his book issued recently, has changed the title to *Infection, Immunity and Biological Therapy,* using the word biological instead of specific. He includes a chapter on nonspecific protein therapy and points out that "Nonspecific activities of bacterial vaccine may exert beneficial and curative effects on disease to which the bacteria incorporated in the vaccine has no etiological relationship."

W. F. Petersen in 1922 published a book entitled *Protein Therapy and Nonspecific Resistance,* which is a comprehensive review of this new conception of the mechanism of recovery from disease. In the preface he writes: "A careful examination of protein therapy will reveal that nonspecificity is not as illogical, theoretically, as a cursory view might lead us to believe." He emphasizes the fact that the nonspecific reaction brings into play no new and heretofore unknown factors of resistance; that it deals largely with reactions previously studied and which have always been employed by the organism in overcoming disease, with or without our knowledge.

*Read before the Philadelphia County Medical Society, April 9, 1924.

THE NONSPECIFIC REACTION

The intravenous or intramuscular injection of a protein substance is followed by a certain amount of local and systemic reaction, which varies from a slight stimulation of the leucocytes to a mild or severe febrile reaction, with shock and vasomotor paralysis.

The reaction, according to Petersen, varies, first, with the form of protein used; second, its method of injection (intravenous, intramuscular, subcutaneous, etc.); third, its absorption; fourth, the strength of its dose; fifth, the type of infection or toxin with which we are dealing; sixth, the physical condition of the patient; seventh, the duration of the disease from which the patient is suffering; and eighth, with the number of previous injections.

In the early work with protein therapy, whether a bacterial, animal or vegetable protein was injected to produce a nonspecific reaction, much importance was placed on the local reaction at the site of injection. These local phenomena, it was thought, were necessary to produce the systemic effects. Much attention was given to the chill, degree of fever produced, variation in the blood count (red and white), nausea and vomiting, nervous manifestations and certain skin eruptions, e. g., herpes and urticaria. At times headache and delirium followed systemic shock from protein injection.

AGENTS USED TO PRODUCE NONSPECIFIC PROTEIN REACTION

In the past six or seven years a large number of organic (biological) substances have been used to produce nonspecific reactions for therapeutic purposes. Bacterial vaccines, diphtheria antitoxins, protein split products, proteoses, extracts from tissues, bee toxins, milk injections, etc., have been employed. Moreover, it is now recognized that other agents, such as serums, yeast, colloidal metals, as well as a number of drugs (turpentine, iodides) and even distilled water may be used to produce a nonspecific reaction for its therapeutic effect.

THEORIES AS TO THE MECHANISM OF THE NONSPECIFIC REACTION

Ten years ago clinical results of nonspecific therapy were hard to explain. Specificity in medicine was at its height and any results obtained with protein injections were considered to represent pure empiricism and were diametrically opposite to expressed conceptions of immunity.

Our knowledge of the specific factors of immunity is quite well established but exact information of the nonspecific elements is less definite. While specific immunization aims to influence directly the cause of the pathological process and is of great value in conditions of known etiology; nonspecific agents exercise their power by altering the reactivity of the whole organism through cell stimulation and tissue activation.

Renaud, 1911, was perhaps the first observer who was given credit for clearly pointing out a definite therapeutic result from the use of typhoid vaccine in

a number of inflammatory conditions of nontyphoid origin. In 1912 Krause and Ichikawa, working independently, reported startling results with the injection of colon bacilli serum in typhoid fever. These and subsequent clinical results, reported by Vaughn, Lüdke, Jobling and Petersen, Miller and Lusk, and many others, have modified our conception of strict specificity in therapeutics.

With the increasing clinical evidence of success the value of the nonspecific protein reaction is no longer ignored, and many workers have advanced theories to explain the beneficial results. Time will not permit me to review these interesting theories, but they all depend more or less on the production of two fundamental changes, viz., general cell stimulation, plasma activation, as Weichardt (3) explains it, and alteration of the permeability of cell membranes as shown by Starkenstein (4) and others.

RÔLE PLAYED BY THE LEUCOCYTE

It is only natural from our knowledge of the rôle played by the leucocyte in immune processes to study the leucocyte picture produced by the injection of bacterial, protein and chemical substances. To the reactive leucocytosis early was ascribed the therapeutic effect that often follows many of the nonspecific injections. Many investigators have found that this leucocytosis is frequently polymorphonuclear and practically all have reported that it is usually preceded by a primary leucopenia. It has been frequently pointed out, however, that the therapeutic effect does not run parallel with the general leucocytosis produced.

Lüdke, Rohanyi, Holler and others have observed an eosinophilia after protein injections, suggesting some relation to the anaphylactic picture.

Mueller (5), from his study of milk injections, calls particular attention to the occurrence of myelocytes and erythrocytes which he believes indicates a profound stimulation of the bone marrow.

In 1913 I pointed out (6), following intramuscular injection of venom protein in a series of fifty-seven patients who had received injections at weekly intervals for from three to six months, that no general leucocytosis was produced. I noted, however, a decided alteration or modification in the proportional relation of the cells in the differential counts for forty-eight or seventy-two hours following a venom protein injection, the most constant change being an increase in the percentage of eosinophile cells and a decrease in polymorphonuclears.

SELECTION OF A SATISFACTORY AGENT

Many workers have attempted to determine some agent that will produce satisfactory therapeutic results without marked local or severe systemic reaction. The selection of the best agent and a scientific method for regulating the strength of dose and frequency of administration are important.

In view of the recognized value of nonspecific therapy today it is desirable that we use a protein for clinical purposes which is chemically defined and the dose of which can be accurately measured. Having mentioned some of the substances used and referred briefly to the leading theories as to the mechanism of the nonspecific reaction, I wish to submit certain observations following the intramuscular injection of venom protein (crotalin) solution.

My clinical experience and laboratory investigations with venom protein solutions have covered a period of fifteen years. In nine or ten articles published since 1910 I have reported from time to time the effect of venom protein injection on the clotting time of the blood, its selective stimulation of the hematopoietic system and its effect on general body metabolism. In 1918 I reviewed (7) a series of three hundred cases of epilepsy in which intramuscular injections of venom protein had been given and pointed out certain nonspecific phenomena and therapeutic results.

Although my use of protein therapy has been largely confined to a series now totaling 612 cases of epilepsy, treated in private practice, it is not my purpose at this time to report on the therapeutic results, which have in many instances relieved or greatly improved the epileptic condition, but to recall that the use of venom protein (crotalin) solution intramuscularly is one of the earlier recorded instances of the employment of a nonspecific protein for definite therapeutic purposes; to report certain observations as to the mechanism of the nonspecific reaction and some of the therapeutic results produced in these patients, independent of the effect on epileptic manifestations.

CHEMICAL COMPOSITION AND EFFECT OF VENOM PROTEIN INJECTIONS IN ANIMALS AND HUMANS

In a paper (8) read June 3, 1912, after having used the venom solution for three years, during which time I had given over two thousand injections to 109 patients, I pointed out in reviewing the chemical composition of snake venom, that it belongs to the albuminoids and consists of two principal compounds, one a globulin and the other a peptone.

In testing the effect of these separate constituents upon the animal and human body ,Newman (9) found that the globulin element acted primarily on the blood and bloodvessel walls. The clotting time of the blood was lengthened and the permeability of the vessel walls increased. In lethal doses of venom in animals, the blood was found to lose its power of coagulation and passed freely through the bloodvessel walls into the surrounding tissues. The peptone element effected the nervous system and in large enough doses caused paralysis.

Mitchell and Reichert (10) described two protein constituents of venom: one of which seemed to be a globulin and the other a proteose or peptone.

Flexner and Noguchi (11) found enzymes in venoms, e. g., proteoses and liposes. They distinguished and classified the various elements as hematoxins, hemaglutinins, neurotoxins and endotheliotoxins.

Chemical analysis thus shows snake venom to be a protein substance, containing a proteose enzyme and it is physiologically standardized by the reptile itself. In view of the theories referred to above as to the probable mechanism of the nonspecific protein reaction, and when we consider that venom protein stimulates the hematopoietic organs, alters the permeability of the bloodvessel walls and lengthens the clotting time of the blood, it seems to meet practically every requirement chemically and physiologically as a satisfactory agent to produce nonspecific resistance for therapeutic purposes.

SOLUTION USED

Since my initial work in 1909 I have used the same venom preparation. The evaporated, dried, yellowish crystals, extracted from the crotalus horridus, are dissolved in sterile water and glycerine, to which is added enough tricresol to preserve and keep the solution sterile.

This solution is prepared in varying concentrations and put into sterilized ampules containing one c. c. each, representing 0.0025 grain, 0.005 grain, and 0.01 grain, etc. A bacteriological test is made to determine freedom from aerobic and anaerobic contamination. Culture media innoculated are allowed to incubate for seventy-two hours. That danger of infection from the solution is practically eliminated, is attested to by the fact that in using over 15,000 injections I have had no infections or deaths.

TECHNIC AND SITE OF INFECTION

The contents of the ampoule is given intramuscularly, using an all glass syringe and platinoiridium needle under the usual sterile precautions. After injection the site is covered with Turlington's balsam and sterile cotton. It has been my practice to give the injection alternately in the left and right forearm group of supinator muscles.

(*To be continued.*)

Effect of Light in the Treatment of Disease.—H. P. Wright (*Medical Clinics of North America,* May, 1924) states that all forms of tuberculosis, except active pulmonary and meningeal, are greatly improved by ultraviolet therapy. In active pulmonary tuberculosis and in tuberculous meningitis ultraviolet therapy is contraindicated. Bone tuberculosis, skin tuberculosis, tuberculous adenitis, tuberculous peritonitis, and pleurisy with effusion are among the forms most successfully treated. Rickets is, perhaps, the most outstanding example of disease, other than tuberculosis, which is successfully treated by ultraviolet therapy. Several skin diseases, such as acne vulgaris, psoriasis, pityriasis, and lupus, are strikingly improved. Ultraviolet therapy, therefore, has a definite clinical application in the treatment of disease. In the absence of heliotherapy, ultraviolet radiations from either the carbon arc or the mercury vapor lamp are the logical substitute; but, with artificial ultraviolet therapy, fresh air must be an important adjunct of the treatment.

Carbuncle and Its Treatment by Magnesium Sulphate.—Albert E. Morison (*British Medical Journal,* April 19, 1924) treats carbuncles by the application of a paste of magnesium sulphate to the whole inflamed area. The paste is spread thickly on a piece of sterile lint, which is in turn covered with a piece of jaconet and abundant cotton wool is applied over this. Eleven ounces of glycerin are put in a hot mortar and 1.5 pounds of dried magnesium sulphate are added, slowly stirring with a warm pestle, producing a thick white cream, which is very hygroscopic. The dressing is left unchanged for twelve or twenty-four hours and then renewed. After a few days the slough separates, leaving a raw granulating surface. The crateriform ulcer is dressed with this paste until all signs of sphacelation have disappeared, leaving a healthy granulating surface. The cavity is then packed daily and the undermined edges are supported with strips of sterile lint wrung loosely out of a saturated solution of magnesium sulphate (forty ounces of magnesium sulphate in thirty ounces of boiling water and ten ounces of glycerin, sterilized in an autoclave). After firm granulations have developed on a level with the surrounding skin the wound area is covered with Thiersch skin grafts or epithelialization is allowed to proceed if the granulating area is not too large. The advantages of this method of treatment are the following: 1. No surgical interference is required. 2. Its application is simple and dressing infrequent. 3. The combined osmotic action and its inhibitory effect on the growth and development of the staphylococcus cleanse the wound and aid in the separation of the sloughing and unhealthy tissue. 4. The granulations formed are firm and lend themselves admirably as a base for a superimposed skin graft.

Selfdefensive Reaction in the Treatment of Malaria.—Ivan I. Manoukhin (*Lancet,* January 26, 1924) asserts that biology must henceforward recognize that the premier rôle in the defensive struggle of the organism against infection and its toxins is that of leucocytolysis, and no longer that of phagocytosis. The latter never comes into play unless the microbes are greatly weakened and their toxins neutralized by the preceding phenomenon of leucocytolysis. The artificial stimulation of the selfdefensive power of the organism (selfdefensive struggle) is one of the recent methods of treating infectious diseases. The primary and secondary hypoleucocytosis following infection is subordinated to ferments in the blood, which induce the destruction of leucocytes; these leucocytolysins are produced in the spleen. Hyperleucocytosis is due to the presence of ferments in the blood which inhibit this destruction of leucocytes; these are called antileucocytolysins and are manufactured in the liver. The selfdefensive struggle is under the control of the spleen. The leucocytolysins produce not only hypoleucocytosis, but they also stimulate the leucopoietic activity of bone marrow and also the antileucocytolytic activity of the liver, resulting in hyperleucocytosis. Röntgenotherapy applied to the spleen, with a certain technic and dose, seems to indicate that the phenomena of stimulated selfdefensive artificial reaction produced in the blood alexin, hemolysins, agglutinins, bacteriolysins and opsonins. All the blood reactions observed in malaria are due to the leucocytolysis, the leucocytolysis being the cause of the selfdefensive reaction of the body to the presence of the malarial parasite.

Linimentum Calcis Chlorinatæ in the Treatment of Burns.—J. W. Tomb (*British Medical Journal,* April 19, 1924) uses a solution of chlorinated lime (linimentum calcis chlorinatæ, B.P.) in the treatment of burns with great satisfaction. The advantages of this method are the following: 1, rapid healing without pain; 2, the absence of suppuration or rise of temperature; 3, the disappearance of sloughing, dead, or decomposing tissue. This remedy has all the advantages of the antiseptic qualities of the hypochlorites and inherent virtues of the linimentum calcis.

Historical Medicine

The Use of the Kidney According to Galen

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It has seemed to me, so far as I have become acquainted with references to Galen's work, too much has been said in vague and vapid admiration of the man and too little specifically of the merits which distinguish his work and the blemishes which disfigure it. Historical dissertation in regard to it has been far from critical and involuntarily the query has arisen whether in fact the indulgent critic has had much acquaintance with it, there existing no full translation into any modern language. His garrulity and combativeness, his vanity and his occasional prevarications it is not difficult to take note of, but it is singular that in this age of experimental medicine emphasis has not been laid upon him as a great experimentalist. Reflecting how eager is the pursuit of support for tendencies in modern science in the history of past thought one can not but come to the conclusion that in the Greek and Latin texts it has become practically inaccessible with the decay of a knowledge of the classics and an appreciation of humane culture.

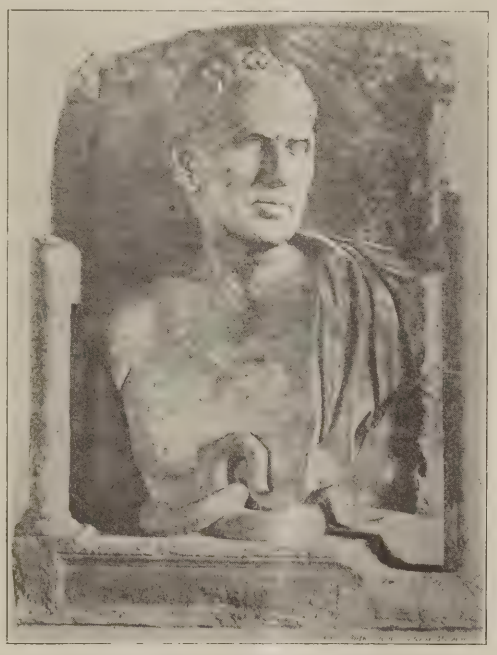
The pertinacity with which Galen belabors a point and his acerbity are repellent elements in his style, but it is vigorous and not infrequently lightened by flashes of innocent humor. Even the gall and wormwood of his acrid discourses on the work of his opponents and enemies, supplying us as they do with the only knowledge we have of writers evidently of great merit, have something human and even humorous in them. They have their attractions and to this spice of humanity in humane letters doubtless we owe something for their preservation as well as to the acuteness of their dialectics and their records of his ancient experimentalism. When he starts in to attack his fellow countryman from Bithynia, like himself a great professional success, each in the Rome of their day, he is often at his best. It seems to make no difference in the vitriolic nature of his attacks that his opponent had been dead a hundred years before he himself was born, though indeed we harbor the suspicion he often is silent as to his contemporaries for prudential reasons, yet unmindful of the generous admonition in Rome, *de mortuis nil nisi bonum.*

At any rate the name of Asclepiades, who was a friend of Cicero and evidently a very talented man, was anathema to him. It is well known to the student of philosophy that Aristotle invented an entelechy for every living thing and with it he filled in the gaps of his knowledge of their physiology. The vitalists have clung to that plan ever since. No one has made more profuse use of this principle than Galen, who approaches the question of renal secretion thus: "However many there may be who are not disposed in any sort of way or in any part to allow control of the power of attraction which governs living processes, they are often compelled to assert what is very much opposed to evidence, just as Asclepiades, the physician, did in the matter of the nerves, but every cook knows that the kidneys not only secrete the urine but concoct it, since they can see the veins going to the kidneys and the ureters connecting them with the bladder" (1). He takes Asclepiades seriously and furiously to task for declaring that when one drinks the liquid, resolved into the atomic waste of vapor, it is in this condition transmitted to the bladder and there takes on its old form of fluid. The obstinacy with which this was urged, according to Galen, was due to the ignorance of anatomists as to the valvelike action of the mouths of the ureters in the bladder. We can not fail to see in this record as to the ancient atomic theory that it was applied plausibly to explain an erroneous primitive idea of the route of the drink to the bladder. We have seen how probable it is not only that this error had its origin far back of any anatomical knowledge of abdominal anatomy, but it has seemed very likely that somewhat to this ancient error was due the Aristotelian idea that the bladder serves, not alone as a reservoir for the urine, but is the essential organ for its secretion, the kidneys being but ornamental adjuvants.

Galen, as has been intimated, distinguished himself from all his predecessors not alone in his eminence as a scolding controversialist and a skilful sophist but from Aristotle in being an experimentalist though far inferior to him as an observer. Empedocles was an experimentalist before Aristotle and upon much that Aristotle had from Empedocles he grounded some of his own theories. One of the fragments of the latter tells us how in the stem of plants and trees there is some mysterious power which draws for the plant the moisture and the food from the soil through the roots. I believe Bose, the Hindu botanist, has arrived by experimental investigations of the utmost delicacy at practically the same conclusion. In how far we have buried this idea in the word osmosis, I am not prepared to say. Aristotle evidently thought of the liquid man swallows and excretes by the bladder in the terms of the more accurate observation of Empedocles as to plants. At the bottom of Galen's physiology too lay this observation of Empedocles, nearly a thousand years old by that time. Galen however finds a path nearer the truth than Aristotle.

"Through the ureters in the living animal the urine very quickly flows to the bladder. This I have elsewhere been compelled plainly to show, hardly hoping to dispel the nonsense of those who deny it with their garrulity. This is the method of the demonstration: The peritoneum in front of the ureters must be incised. Then with nooses they are to be pulled up separately. Then turn the animal loose with his external wound bandaged. He can not urinate any more. After this take off the external bandage and show the bladder is empty, the

ureters full and distended almost to bursting. Then releasing the ligatures see the bladder quickly fill with urine. Upon this before the animal can urinate place a ligature around the penis and then press on the bladder on all sides. No urine will go back through the ureters any more toward the kidneys. It becomes evident then not only in the dead animal, but in the living, the urine is at once prevented from going back to the bladder by the ureters. These things having been seen, allow the animal to urinate, loosing the ligature on his penis. Then immediately tighten the ligature on one or the other of his ureters and permit the other to be permeable to the bladder. Allowing some time to pass show that the ureter which is ligated appears full and distended in the part below the kidney and the other one, unconfined, is not only slack but has filled the bladder with urine. Then cut through first the full one and show how the urine shoots forth like the blood in phlebotomy. After this cut also the other and put the external bandage on the animal, both ureters having been divided. Then when it seems suitable take off the external bandage. The bladder will thereupon be found to be empty. All around the intestines and in the peritoneum it will be full of urine, as if the animal were dropsical. Thus if any one for himself should wish to prove it upon the animal, it seems to me very decidedly he would be convinced the talk of Asclepiades is foolishness." (1a)



AN UNKNOWN ROMAN PHYSICIAN
(From *Plastik und Medizin*, Holländer)

It seems a little strange that Galen does not specifically hold up to refutation here the idea of Aristotle that the bladder secretes urine. In the experimental work just quoted is to be found a fairly conclusive refutation of it, but he does not mention him in this connection, though manifestly he must have had him in mind. Apparently he was somewhat awed by his name, though we find him criticising the ideas of Aristotle oftener than we do those of Hippocrates or Plato, but to his support doubtless we owe the complacency and cocksureness with which he views the doctrine of physiology by fiat, for that is what, laying aside the ridiculousness of the tautology, it amounts to when one says an organ attracts by virtue of its attractive force.

Galen says (1b) Lycus the Macedonian advanced a theory that the urine was the superfluity of the food digested for the nutrition of the kidneys. This he ridicules and from a theoretical point of view he demolishes it. In the book on the diseases of the kidneys (2), which Kühn says is ascribed to Galen, that idea is accepted as a physiological basis of discussion. This book therefore can hardly be considered as coming from the hand which wrote the *Natural Faculties,* and Galen was undoubtedly the author of this. From the style alone of the book *On the Diseases of the Kidneys, Their Diagnosis and Cure,* one familiar with the genuine books would hardly recognize it as that of Galen. However, it is well written and a very able treatise. Although in it we find the tautology of vitalism, it may seem singular Galen did not include this in his ridicule, if this was indeed written by Lycus the Macedonian, but the tautology of vitalism is a part of the absurd that was not ridiculous to Galen. The author of this book declares: "There is an energy in the kidneys to distinguish the watery urine from the blood. There is a certain suitability in them. This is to be sought for, not alone in the kidney, but it is the energy of every part. This injured, disease affects the part." *Voila que votre fille est malade.* Molière saw grist for his comedies in such stuff.

Galen is usually not so easy a mark as this. He finds (3a) difficulty in reconciling the phenomenon of polyuria in diabetes with the idea it is due to excessive attractive power. How then does the kidney give up the urine to the bladder? He likens this, without throwing much more light on it, to the dog like voracity for food, when large quantities are swallowed, but soon vomited or expelled in diarrheic discharges. The voracity of the kidney for the watery serum of the blood then is not in diabetes antithetic to its passing it on to the yearning bladder, but excessive hunger or attraction for food is partly psychical, as coming within the scope of our consciousness, but not so the secretion of the urine in the diabetic kidney. If Galen could have had cognizance of Pawlow's experiments he would have seen how intimately the psychical and the physical art intertwined. He would also have known that certain psychical stimuli are without consciousness effective in increasing the secretion of urine, indeed many other things.

Yet however many there are Galen did not know we still not infrequently employ tautological terms that have a vitalistic meaning and it is safe to prophesy we shall never get away from it, for behind all the mysteries that have been and all that surely will be cleared up will lie a mystery still, but it is in the last degree deplorable that the human mind, confused when it loses the path, should be ever declaring its own impotence. We see some of the confusion is bound up with a sophistical curiosity to know when intake becomes outgo, when attraction becomes expulsion. At times it seems as though the thought is that the dryness draws the wetness. From his remark that the food has an influence on the intensity of this attractive power of the kidney we may conjecture he had observed the effect of starches and sugars in diabetics. This at-

tractive force from the very first gulping down of the food to the secretion of the urine is all one thing. There is an excessive desire for food and drink in some cases without diabetes, so that without any systemic disturbance and without over nutrition two or three times as much food is taken in as is ordinarily consumed. The abnormal desire for food and drink thus enters into the complexes of diabetes and watery diarrheas. It is all essentially an attraction process.

Since the laws of osmosis were unknown, it must be remembered there was no way to explain, better to say there was no way to trace the movements of some of the secretions to their destination, but in "osmosis" we have substituted a word which we understand no better. We are dropping that and taking refuge in "surface tension" which we understand less. The essential point is, however, in making use of a mystic term just as we do now. Galen dislocated it, applied it less exactly, oriented it wrongly (3a). It was the gallbladder, not the surface demarcation between one cell and another, that drew the bile from the liver, the urinary bladder which drew the urine from the kidneys, but he got closer to it when he declared it was the stomach that drew the nourishment from the food and it was the kidneys drew the urine from the blood. This it will be seen falls somewhat in line with modern methods of thought, but it would be more difficult and less instructive to search out the connection between this mechanism and the desire for food, though Pawlow has advanced close to each side of the gap which separates mind from matter. All of Galen's physiology is based, possibly through Aristotle, on the conception we find in the scanty fragments we have of Empedocles observing the moisture and nourishment rising from the soil through the roots of the plant stem to the periphery of the leaf. Bose, the Hindu physiologist, as I have said, with marvelously sensitive apparatus has fixed this mystic power, over which he lingers with the love of the true oriental, in the cell structure itself. He has not only located it but measured its potential. We shall, however, have to leave him to the mercy of the physicist and the materialist, and not attempt here to draw any distinction between "attractive force," "osmosis," "surface tension" and mysticism.

It is a little hard to understand what connection there is physiologically between the convexity of the liver and the kidneys, but according to Galen they are both relieved in disease by evacuation through the urine (4), that the excretion from the superior convex surface of the liver is through the kidney. On the other hand from the concavity of the liver the excrement goes out through the intestine. The spleen, too, as we have seen in Aristotle and Hippocrates, also for Galen draws water from the stomach and in his thought had a connection with the excretion of urine, just how it is hard to say, but I imagine the hard tense capsule of the top of the liver, of the spleen and of the kidney led to his thought of their affinity.

In a book (5), discussing the theories of Plato and Hippocrates, Galen traces out his theory of the excrementitious organs, established by the wisdom of nature for the purification of the body from the superfluities of the blood resulting from concoction or digestion—the kidneys, the spleen, the gallbladder, "there is no fourth." Elsewhere (6) he declares there are three coctions in the veins, one of the yellow bile, the second of the black bile, the third the serous. The gallbladder draws the yellow bile out of the liver, the spleen and the kidneys their secretions. We hide our mysticisms under various names, but Galen certainly does not, as Sir Clifford Allbutt (7) remarks: "cast aside the oriental cosmogonies unconditioned and based upon the fiat of God." Far from it, he is, as insistently as Plato, bringing in the fiat of God to help him out of difficulties. It is astonishing to find the learned and gifted modern author commending in this connection "his insight and theoretical capacity." It is true he does not everywhere lay himself open so unguardedly as the author of the book on kidney diseases—"The retentive faculty retains that which is useful and rejects that which is useless" (2)—but his teleological philosophy leads him into a tautology scarcely less ridiculous in many places even of his greatest work—*Utility of the Parts*. Though he constantly speaks of Nature as a demiurge, it is not at all in our spirit of rationalism but in one of pantheistic mysticism. That sort of thing is essentially something which can not be got rid of. Something must stand for the unknown if not the unknowable. What difference whether it is attractive force or surface tension? The significant thing here, in passing from Aristotle to Galen, is that the latter drops the bladder as a secreting organ in the sense Aristotle uses it, but yet, since it had even for Galen an attractive force, we here strike the trail of Aristotelian physiology. If we note an advance here in his edging away from the original form of the doctrine, he repeats Aristotle's error in stating that the right kidney is higher than the left and the vein and artery to it come away at a higher level from the Vena Cava than the vessels on the left. This is true of animals but not of man. Elsewhere (8) he has shown experimentally, in acrid refutation of Erasistratus, that the arteries contain blood and here pointing out the arteries have their insertion in the kidneys he asks: "If they are not there for the purpose of having the blood purified in them, will any one tell me why Nature has made these so large and divided them up in the cavity of the kidney and acted with them not otherwise than with the veins? They are for separating the serum from the blood and this is the reason of their great size" (9).

Then comes the very interesting and withal ingenious explanation why one kidney lies higher in the abdominal cavity than the other: "If each of them exerting their attractive force on the serum of the blood should have the bloodvessels (going to them from the aorta and vena cava) given off opposite one another they would be pulling against one another." We should state the problem inversely. It would be the impulse of the current in each from behind. Either way however a modification in hydrostatics would seem to follow if the vessels were arranged thus. Our anatomists say that it is because of the liver this inequality obtains in man, the right kidney in reality being lower, but both

Galen and Aristotle speak of it as higher. In animales, even in apes, this is said to be so. We save ourselves a deal of trouble in refusing to be interested in teleological anatomy, but it was from that angle the ancient anatomists studied it. Their dissection confined as it was to animals is responsible for this divergence, but the modern anatomist in regarding the liver as the cause of the right kidney being the lower, even venturing thus far into teleology leaves something to be explained in the anatomy of animals. Indeed there is no reason but one of hydrostatics, it would seem, why the left kidney is not lower and opposite the right. So, essentially after all, Galen's surmise that hydrostatics is the chief element in the problem, seems not far wrong, despite his mistake as to the anatomy of man. His explanation why there are two instead of one kidney, one reason offered being that it is to preserve the equilibrium of the body, calls for no serious discussion. It is probably true that it is a safeguard, one kidney at times being capable, when the other is disabled, to do the work of two, but, from a teleological point of view, we can hardly argue thus, a a single stomach, liver, spleen, being in our road Black bile from the spleen and yellow bile from the liver find their way, the one through the left, the other through the right kidney, to the bladder in the urine, but we should go too far afield to enter into the Galenic physiology of the liver and spleen. He concludes it is the density of the kidney substance which under normal conditions may be credited with accurately separating the thicker red part of the blood from the watery urine. This also has lost its interest for us, though possibly we might twist our own thought into line with that of the ancient physiologist. At any rate the reason of the surmise on his part is not far to seek.

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Contributors to the Science of Medicine

Benjamin Rush

Benjamin Rush was born, of Quaker parentage, near Philadelphia on December 24, 1745. He received his schooling at Nottingham Academy, from whence he went to Princeton University, graduating in 1760. The following six years he devoted to the study of medical science, and was a member of the first class to attend the celebrated lectures of Shippen on anatomy. In 1776 he went to Edinburgh, where he received his medical degree in 1768. The next year he was called to the chair of chemistry in the College of Philadelphia, which in 1791 became the University of Pennsylvania. Rush was made professor of the institutes and practice of medicine, and his fame as a teacher has lasted until our own day.

When the medical department of the Revolutionary army was reorganized in 1777, high sounding titles were instituted as an inducement to attract the best type of physician for military practice. There was a director general of the medical department, there were physician generals of the hospitals, surgeon generals of the hospitals, and physician and surgeon generals of the army. Rush received the appointment of surgeon general of the hospital in the Middle Department. This was the first time the title of surgeon general appeared in the American service. After only three months, however, Rush was transferred to the position of physician general when Dr. Walter Jones resigned from that office. Able as Rush's work as a military medical officer was, it was greatly overshadowed by his work as a teacher and civilian practitioner.

Rush was a member of the Continental Congress of 1776, and one of the signers of the Declaration of Independence. He also served as treasurer of the national mint for the fourteen years preceding his death. He was deeply interested in all state and educational matters and was a leader in the improvement of medical service for the Revolutionary army. He was able to accomplish much toward progress in military medicine through his office as surgeon general of the Pennsylvania army. Rush was an intimate friend of Director General Morgan and a strong supporter of his policies. He was just as strongly opposed to his successor and rival, Director General Shippen, even going so far as to prefer against Shippen formal charges of abuses in the medical department, upon which, however, there is no record of any final action ever having been taken.

He was one of Pennsylvania's greatest and most active educational leaders. His earlier energies were devoted to establishing and promoting the University of Pennsylvania, in whose welfare he always retained the most profound and active interest. His devotion to this institution did not prevent him, however, from realizing the great need of a college farther west in the State, and it was through his efforts and inspiration that Carlisle

College was founded upon what was then the far frontier of Pennsylvania. John Dickinson, another great patriot of the Revolution, at that time Governor of Pennsylvania, was his coworker in founding and promoting this institution.

Rush's broad interest in everything that had to do with progress and enlightenment is further evinced in his championship of the cause of the abolitionists and his numerous published speeches and writings against slavery. He was also intensely opposed to all form of capital punishment, and spoke and wrote fervently in behalf of the abolishment of punishment with death or even of murder. His brochure entitled *Inquiry into the Justice and Policy of Punishing Murder by Death* is one of the finest and most brilliant contributions against capital punishment ever produced by the pen of an American. He championed with equal ardency the cause of temperance and that of the antitobacconists. His two monographs on these respective themes were widely circulated and read by both the laity and the medical profession. These were respectively an *Inquiry into the Effects of Ardent Spirits upon the Human Body and Mind,* and *Observations upon the Influence of the Habitual Use of Tobacco upon Health, Morals and Property.*

Dr. Rush was a most prolific writer and speaker. His account of the epidemic of yellow fever in Philadelphia in 1793 was probably the best known of his medical writings to his contemporaries, and is still a medical classic. Other famous treatises were his *Defense of Bloodletting* and that on *Diseases of the Mind.* One of his favorite sayings was: "Medicine is my wife and Science my mistress." Dr. Oliver Wendell Holmes wrote of this statement, "I do not think that the breach of the seventh commandment can be shown to have been of advantage to the legitimate owner of his affections." Dr. Rush's papers on the diseases of North American Indians (1774), their vices (1798), and his account of the Pennsylvania Germans are probably the earliest contributions to American anthropology. He was the first after Bylon of Java to describe dengue fever, and the first to record thermal fever caused by drinking cold water when overheated. Rush was by far the ablest clinician of his time, and his fame extended throughout Europe. Lettsom called him "the American Sydenham," and his own countrymen "the Hippocrates of Pennsylvania." Royalty of Europe bestowed upon him many medals and a large diamond.

Benjamin Rush was a man of warm, almost intense personal affections; his friends were legion and drawn from all types of person and from many nationalities. He was a man of exceptional charm of manner, and of handsome and distinguished appearance. His profile was aquiline in outline, and his face expressed native shrewdness and penetration and a brilliant and everactive mind. With all his popularity, however, he was a man of decided opinions and absolute courage, as is shown by his campaign against Shippen, and his desertion of Washington at Valley Forge to join the infamous Conway Cabal against Washington's socalled Fabian policy. He sometimes tended to become unreasonably stubborn and even showed bad judgment in upholding a fixed and at times wrong opinion. His critics have called him a typical eighteenth century theorist, whose social propaganda against war, slavery, alcoholism, and the death penalty was perhaps not entirely dissociated from a personal interest in increasing his own practice. But his friends were equally ardent in his defense, declaring him to be not only the ablest physician but also the most disinterested reformer of his time.

When several years ago the question came up of erecting a statue in Washington to a representative American physician, the name of Benjamin Rush was immediately proposed. The plan was fostered for years by one of his distinguished successors in the national medical service, Commodore Albert L. Gihon, Medical Director, Retired, in the United States Navy, and fourth President of the Association of Military Surgeons of the United States. Unfortunately Gihon's death deprived him of the pleasure of witnessing the dedication of the statue in 1904, but the unveiling of the monument was attended by a large and representative body of physicians from all parts of America, and it now stands in the national capital as a testimonial to the distinguished services of the first titular Surgeon General in the American Army.

The Multiple Personality of Dr. Guy Patin.—Dr. Joseph W. Courtney (*Annals of Medical History,* March, 1924) writes that "the seventeenth century was the farce-comedy era in the medical history of France. Of all the actors who held the stage no other is quite as interesting, no other played as many rôles as did Dr. Guy Patin, son of François Patin, onetime advocate in the parliament of Paris." The interest in medicine first came into the young Patin's life when he was a proof reader in a printing firm. Here he was discovered by the great anatomist, Riolan, who encouraged the boy to study medicine. In order to do this in those days, Dr. Courtney tells us that four qualifications were necessary—a sound knowledge of Latin, unremitting application, a prodigious memory, and a habit of thought guiltless of even an infinitesimal taint of originality. Patin qualified in every particular. "In 1627 he became the proud possessor of the doctor's bonnet, and from that moment to the end of his long career, in 1672, a new side was conspicuous in his character. This pertained solely to his professional tenets and activities. In these he was Hippocrates *tout craché,* to use an expression current in his native Picardy. So much did he fancy himself in this rôle that he aped as far as possible the severe and simple garb of the wise man of Cos. The lancet and purge, consisting of senna, cassia, rhubarb and syrup of pale roses, constituted his entire therapeutic armamentarium." Had Patin not wielded the pen almost as frequently as the lancet, however, probably has name would long since have disappeared from the annals of medical history. He wrote letters, nearly two thousand of which are extant, and the contents of these as a whole give little evidence of the paragon of all the virtues who is depicted in the collection of letters edited by Reveillé-Parise which appeared in 1846. Here he is shown as a noble, publicspirited

citizen who scorned wealth and position, and who raised an angry voice against the sufferings of his fellow citizens and fatherland through the rapacious greed of wealth and power. He is shown as the exact opposite of the baseness, corruption and brutality of his day. The letters themselves, however, depict Patin as occupying, throughout the famine stricken period of the Fronde, a house in the most fashionable quarter of Paris, beautifully located and far from the turmoil of the city. He boasts smugly of being amply provided to withstand a siege of any length. Here he sat and played Erasmus, seizing an opportunity too good to be lost for retaliating for what the Church more than a century before had done to his venerated idol, and attacking the followers of Loyola, the while luxuriously seated at his desk and far from the heartbreaking turmoil of the times. There is no more individuality in his tirade than in that against the publishers against whom he is constantly inveighing.

Long parades of selfdenial and disdainings of mundane pomp and display ornament all his writings, yet in life he fawned most unctuously upon rich and prominent men, and boasted of the use of their equipages, his visits to their homes, and the welcome he was acorded there. So good a storyteller was he, however, and so startling and entertaining his confabulations, that there was a story current that every time he sat at the table of M. Lamoignon, president of the parliament of Paris, he found a louis under his napkin.

Patin was brutally cynical about women, but, probably because of his great craving to be recognized as an author, he knew the whereabouts of all the printing presses, in those days identical with publishing firms, in Europe; he was acquainted with all the booksellers and with the book markets of England and the continent; and he knew the size and contents of every private library of note in the capital. He had upon his own shelves all available editions of the fathers of medicine, all the commentaries and commentaries upon commentaries, and the works of men nearer to his times, as well as all the classics—nine thousand volumes in all, he tells us.

The Conflict of Medicine with Quackery.—Dr. Walter R. Steiner (*Annals of Medical History*, March, 1924) writes that rational medicine founded upon observation was unknown until its introduction by Hippocrates. At that time the profession was largely hereditary, and Hippocrates is said to have been the seventeenth in lineal succession from Æsculapius. There were no specialists, and, with the possible exception of India, no legal requirements in force until the thirteenth century. In India we find in the Ayur Veda, dating from about 600 B.C., the statement that the medical candidate upon completion of his studies must petition the king for permission to practise. Even Hippocrates berates those who rely upon amulets and charms to cure. For many centuries Greek medicine ruled supreme, but Roman fell into disrepute for the physicians were for the most part a motley gang, including augurs, *schoenobates, medici, magi.* Exceptions were Antonius Musa, physician to Augustus, and friend of Horace, Vergil, and Maecenas; and Meges, praised by Celsus. Thessalus, Nero's physician, is reputed to have tried to make doctors in six months of cooks, dyers, spinners, weavers and cobblers.

Between the seventh and eighth centuries, a medical school was founded at Salernum, Italy, which soon became renowned. A hospital was founded in connection with it in 1820, and its teachers were the first medical physicians to culture medicine as an independent branch of science. The first attempt to organize medical men into a profession came from this school, and Robert of Sicily in 1140 promulgated an ordinance to regulate the practice of medicine. Henri de Mondeville, surgeon to Philip the Fair of France, brought about the establishment of an edict against unqualified practice in 1311. In the fourteenth century, specialists were rampant, some practising with a license, some without. Quacks and mountebanks went about France, advertising themselves and practising their "cures" in the market places.

In England the first attempt to obtain legal control of medical practice was made in 1421, but with no results. In 1511, however, an act was passed for the regulation of medical and surgical practice, but so much dissatisfaction arose from this act that it was modified so greatly that it was practically annulled. In 1518 the College of Physicians was founded with absolute control of false medicine and practice, and the power of committing to prison all quacks and to seize their wares. From this time most of the countries of the world have had many laws against the practice of quackery, more or less stringently enforced.

Among famous quacks whose careers are outlined by Dr. McFarland are Lucius Horatillavus, the famous Roman charlatan; Valentine Greatrakes, with the touch for the King's evil; Sir William Read, Chevalier Taylor, and Dr. Roger Grant, quack oculists; Joshua Ward, known as Spot Ward, politician and promoter of many fake remedies; James Graham, quack oculist and aurist of Philadelphia, who later went to London where he opened his "Temple of Health"; and St. John Long, Irish painter, teacher, and compounder of many concoctions; he mentions Mesmer, Cagliostro, the Taylor brothers, Mr. and Mrs. Loutherbourg, Mrs. Mapp and Joanna Stevens.

The article is concluded with an account of the provisions and laws in the United States against the practice of quackery, from 1736 when the Virginia Assembly passed an act for regulating the fees and accounts of the "practicers of physic," to the present day propaganda on the part of physicians and medical journals to combat this evil.

Dr. McFarland quotes for the purpose of showing why quackery is universally possible and even popular from the *Regimen Sanitas* of the school of Salernum:

> There is no fool whate'er the sex or grade
> . . . . . .
> But has his name among wise Doctors placed
> And thus through greed the Healing Arts disgraced.

Also Dr. John Brown's famous definition: "Quackery and the love of being quacked are in human nature as weeds are in our fields," is also quoted.

Editorial Articles

THE VALUE OF LIGHT

The therapeutic value of light has been more or less recognized for centuries, but its really remarkable healing and recuperative properties are now being more thoroughly gauged. There are few maladies which are not benefited by sunlight, among these rickets may be placed in the front rank, and few diseases which are not injured by its lack.

A fair and impartial estimate of the value of sunlight is given in a paper on heliotherapy contributed to the *Boston Medical and Surgical Journal,* August 7, 1924, by R. Plato Schwartz. He says that although sunlight is not equally effective for all patients, its use, under widely varying climatic conditions, has defined definite advantages over other forms of therapy which makes it a therapeutic agent of the first consideration in the treatment of osteoarticular tuberculosis. According to Rothier, the chief apostle of the light treatment, Bernhard, of Samaden, began to expose patients' affected extremities to sunlight in 1902. In the following year Rollier at Leysin advocated and practised the treatment of extrapulmonary tuberculosis by systematically graduating the exposure of the whole cutaneous surface to the sun's rays.

Sir Henry Gauvain, at Alton, England, the late John H. Pryor, Clarence Hyde, and Horace Lo Grasso were the first to demonstrate that heliotherapy could be successfully used in England and the United States.

Dr. Schwartz states the prophylactic value and therapeutic indications for systematic, graduated exposures of the entire body surface to sunlight in the mountains, on the plains, and at the seashore has become well established. Dr. Schwartz, after reviewing at some length the indications for treatment and the methods of treatment for osteoarticular tuberculosis points out that the failure of restoration of function in tuberculous joints in the past has been due to: 1. The destructive character of the disease, which reached wide limits because it was opposed only by the unstimulated defensive mechanism. 2. The long continued application of plaster and similar apparatus resulted in such complete atrophic degeneration of specialized structures that ankylosis was necessarily a desirable outcome. 3. The absence of therapeutic measures which were effective in overcoming the systemic infection while the local lesion apparently recovered, not only favored recurrence, but predisposed the patient to more severe manifestations of the disease elsewhere. The conclusions are as follows:

1. Thirty-three years have not produced universal confidence in the use of tuberculin in the treatment of any form of tuberculosis.

2. Heliotherapy has clinically proved the indications for its use on the basis of the general changes in the patient, the prevention of deformity, and the restoration of function in the affected joint, providing that fundamental orthopedic requirements are met.

3. High altitudes have a certain advantage, but excellent results are being obtained at the seashore; at either level clean clear air is a necessity.

4. Systematic, graduated exposure of the entire body, except the head, with careful observation of each patient as the period and extent of insulation is increased, seems to be of fundamental importance in any serious attempt at heliotherapy.

5. Clinical observations and laboratory investigations, at present, favor the opinion that the therapeutic value of the solar spectrum is not due to the effect of any one region; but is more the result of the combined effect of the entire spectrum.

6. Artificial sources of light are to be regarded with suspicion until it is proved that they reproduce the solar spectrum in extent and intensity.

7. The local lesion in the bone or joint should be completely immobilized during the acute stage; apparatus is indicated but should not interfere with insulation. Sinuses and ulcers should be unbandaged twelve hours out of the twenty-four and subsequent treatment should favor the restoration of function.

8. Surgery must be looked upon as occasionally essential in the conservative attitude towards the treatment of osteoarticular tuberculosis, but to use it wisely requires a knowledge of when conservative measures have reached their full potentiality in each individual case.

This seems to be a fair consideration of the value of heliotherapy in the treatment of surgical tuberculosis. It will be noted that the author is sceptical as to the value of those lamps which do not come up to the predicates laid down in his conclusions. For example, he is doubtful that lamps which give off essentially ultraviolet rays can fulfill heliotherapeutic requirements. It may be asked, Is there any form of artificial light which does fulfill these requirements?

It has been stated on several occasions that artificial light of a certain kind is practically as effective in its results on surgical tuberculosis as heliotherapy. This is a matter which should be decided as quickly as possible. Schwartz definitely states that both the mercury vapor lamps and the ordinary carbon arcs

ailed to give sufficiently good results to justify continuing their use. On the other hand, it is stated hat results reported by Ernst from the Finsen Institute were obtained entirely by the use of artificial ight and in some respects are better than those reorted by Rollier, who is admitted to have almost deal natural conditions. Were the results by Ernst btained from artificial light which comes up to the ostulates of Schwartz? This is a very important oint, for while heliotherapy may bring about good esults in low altitudes, the lack of sunlight suitable or treating tuberculosis is more likely to occur in ow than in high altitudes and therefore artificial ght is more called for in cloudy places than in comaratively bright. Dr. Schwartz says that a proper ource of artificial light seems to be indicated in intitutions where conditions are most favorable for dministering heliotherapy, but the proper source of uch light must be known. However, it is most enouraging to know from irrefutable proofs that surical tuberculosis may be greatly benefited by helioherapy employed scientifically and expertly.

As E. L. Tushy said in a paper read on June 27, 924, before the medical staff of the Lymanhurst chool for Tuberculous Children and the Parkview anatorium, "It is increasingly more evident that ven such simple procedures as the application of eliotherapy, Alpine light, ordinary sunlight, cannot be done in a hit or miss manner, but must be onscientiously and carefully supervised by those who now what they are doing."

MONGOLISM IN EUROPE

The descent of man has ever been a much discussed ubject among men of science, and one that is yet good deal of a mystery. A study and consideration f Mongols in western Europe has been written by r. F. G. Crookshank of London, and given to the ublic. The title of the book is *The Mongol in Our Midst, Study of Man and His Three Races* (London: Regan, Paul Trench, Trubner & Co.; New ork: E. P. Dutton and Co.) and it deals with the currence in western Europe of individuals of the ongolian type, a type ranging from the congenital iot to that of the person of slight "mongoloid" haracteristics, but who possesses frequently intellince considerably above the normal, and especially rhaps literary and artistic talent.

There are numerous people of non-Mongolian race ho carry with them many of the physical facial tributes of the racial Mongolian, who live not only western Europe, but in various parts of America. r. Crookshank has set himself the task of arraying e facts bearing on the matter in orderly sequence, id of putting forth a hypothesis, perhaps pointing a moral. He points out that the pioneer, at any rate in Great Britain, in this line of research, was Robert Chambers in his book *Vestiges of the Natural History of Creation,* published in 1844 and which, by the way, as Darwin himself confessed, suggested to him *The Origin of Species.* A prominent part of Chambers's theory was that parents too nearly related tend to produce offspring of the Mongolian type, that is, persons who in maturity are still a kind of children. Dr. Langdon-Down, a well known London physician, some twenty years later, suggested the classification of idiots and imbeciles by their "ethnic character."

Langdon-Down declared that in Great Britain are met some idiots and imbeciles who appear to belong to the Ethiopian or Negro variety of the human race, others who resemble Malays, and so on, while "a very large number of congenital idiots are typical Mongols" and can be fairly referred to one of the great divisions of the human family other than the class from which they have sprung."

The name of Mongol is now used in every British hospital for children and every asylum applied to imbeciles of the kind that he first distinguished with precision. Langdon-Down's general ethnic classification of imbeciles has been forgotten and there has been a recent tendency to assert that Mongolian imbeciles do not resemble racial Mongols in spite of the fact that Langdon-Down defined the class described by the obvious possession of characteristics of racial Mongols. Crookshank's object is to show that Langdon-Down was right and that really it is the Mongolism rather than the idiocy that it is important to stress. In his opinion the Mongolism that is so evidently displayed by a proportion of the indigenous population of western Europe, and he might have said of America, is far from being a mark of idiocy or imbecility, but is a kind of physical and psychical make up that is coarsely and brutally displayed and accentuated in certain idiots and imbeciles.

Crookshank explains and develops his hypothesis throughout the book with admirable lucidity, giving careful consideration to the ethnological distribution of Mongoloid imbeciles and nonracial Mongols having indications of simian traits. Another chapter deals with the homologies found between racial Mongols, the orang-outang, and the Mongolian imbecile. Moreover, he suggests that homopogies may exist between certain white races, the chimpanzee and cases of dementia precox, and also of a similar state of affairs as regards the negro, the gorilla and the mental defective of Ethiopic strain. Posture and handmarking are dwelt upon emphatically as well as physiological and anatomical characteristics. In the last chapter he brings forward the theory that an hypothesis of common descent for all the homologous

individuals, men, apes and imbeciles, may explain all. It seems that the hypothesis is worthy of close investigation, as the case for the opinions propounded by Crookshank is strong and, at least, has more to commend it than some of the theories now advanced, as much, for instance, as the elucidation by gland balance which appears now to hold the popular scientific fancy.

Professor Klaatsch suggested a scheme of descent in which he placed together as proceeding from the same stems the three main human types, and the three types of anthropoid apes. In this suggestion he was supported by Sera, who emphasizes the facial resemblance between racial human types and the various types of apes and monkeys. As a matter of fact, Sera's views are in accordance with much of what has been pointed out in the book discussed in this editorial, and which, while they have gravely disturbed orthodoxy, have given students furiously to think. And after all, as Crookshank sagely says, Langdon-Down's brilliant observation, that an ethnic classification of imbeciles can be sustained still stands.

LONGER LIFE

According to Mr. Harold A. Ley, president of the Life Extension Institute, the life of the human race has been extended twenty years during the past century. This is to say, that while the average person could only expect to live to be thirty-five years of age, one hundred years ago, he can now expect to live to be fifty-five years old today. Men at all ages die earlier than women, and people living in the country show the greatest longevity. Occupation has a great deal to do with long life, some trades and even some professions being obviously more unhealthy than others.

The general death rate among industrial workers between the ages of fifteen and sixty-five, as estimated on the basis of mortality experience of life assurance companies for 1920, is 10.10 in 1,000 living. Among graduates of women's colleges, it is only 3.24. Clergymen live long, lawyers not so long, while the medical profession is comparatively not conducive to longevity. It appears that the highest mortality is, or rather was, in this country at any rate, among collectors and traveling salesmen for breweries. Since 1900 the general death rate in the United States has fallen from 17.6 in 1,000 to 13.1 in 1,000.

Judging from the annual report of the Chief Medical Officer of the Ministry of Health for 1923, the figures for England and Wales are yet more remarkable. In that year both the death rate and infant mortality rate were the lowest on record, 11.6 in 1,000, and sixty-nine in 1,000 births respectively.

Public health measures have practically eliminated most of the deadly contagious and infectious diseases. For example, since 1907 there has been a decline in the death rate from tuberculosis in this country of eighteen per cent. Typhoid fever rate has shown a drop of fifty-five per cent. during the same period. Vaccination has abolished smallpox epidemics. Yellow fever to all intents and purposes has been eliminated, while malaria has been dealt some weighty blows, indeed we have learned that its abolition is but a matter of money.

The danger of the spreading of diseases such as scarlet fever and diphtheria has been greatly minimized by quarantine regulations and other measures. As Mr. Ley has pointed out, the main means of lowering the death rate and lengthening life have been the improvements which have been made along lines of public hygiene and public health works, as improved water supplies, sanitary sewage disposal, regulation of milk supplies, and improvement in handling foods. Also improved conditions among industrial workers has been another factor in extending the life of the race. However, he is of the opinion and he doubtless is again correct, that the surface has only been scratched as yet in the possibilities of eliminating waste in industry through the prevention of sickness.

Sir David Bruce in his presidential address to the British Association which met in Toronto a few weeks ago, referred to this waste in most emphatic terms. He estimated the loss in Great Britain to this cause to over seven hundred million of dollars and in this country to a much more colossal sum. Stress is to be laid on the point that most of the improvement in the extension of life has been the result of public effort and that the next great step in extending it still further is in the direction of personal hygiene. The time has now come when people must give thought to what each individual can do not only to prolong life but what is more important to keep away sickness which incapacitates and renders life a burden.

The epidemic diseases have been fought and, to a large extent, conquered. The time has come to grapple with the chronic diseases, infant mortality and other generally preventable maladies. Before concluding a perhaps unduly long editorial, some of Sir George Newman's sage remarks on this subject in his annual report will be referred to briefly. He notes that the real health problem of a nation centres rather in the question of sickness and physical impairment, that great burden of suffering which helps to fill the hospitals and asylums, which robs industry of its fullest productivity, and which is the principal cause of physical inefficiency. He emphasizes the point that this general sickness and in-

validity is largely unmeasured and unregistered, though much of it lays the foundation of mortal disease and much of it is preventable. With regard to education in personal and domestic hygiene, in which largely rests the prevention of chronic disease, he insists that it must begin in the elementary schools and should continue through life. It should give particular attention to personal hygiene, nutrition and the right use of foods, and be definitely related to the improvement of national physique and capacity. Also he dwells upon the need for combating disease by means of wholesome environment and healthy living. Mr. Ley and Sir George Newman are both insistent that personal hygiene and environment are leading factors in diminishing sickness and mortality, and the hope is expressed with a considerable amount of confidence that as time goes on and personal and domestic hygiene improve, sickness and invalidity will decrease and the general health will be at a greatly higher standard and consequently life will be longer and healthier.

IODINE AS A THERAPEUTIC AGENT

The great value of iodine as a food and a medicine is now beginning to be recognized. Where iodine is scarce, goitre is abundant and confirmation of the relationship between a lack of iodine and the presence of goitre is continually forthcoming. J. F. McClendon and J. C. Hathaway, of the University of Minnesota, reported recently to the American Medical Association on this point. They analyzed samples of drinking water and food from all parts of the country, and found that where iodine was rare, cases of goitre were numerous. For example, water from Lake Superior near Duluth, Minn., and drinking water from Spokane, Wash., and from Rockford, Ill., contains only one part of iodine to one million parts of water.

Goitre is relatively frequent in the regions in which these places are situated. On the other hand, water from Mexia, Texas, and from Stanford, Cal., where goitre seldom occurs, was found to contain respectively eighteen thousand and ten thousand parts of iodine to the million parts of water. According to the investigations of Drs. McClendon and Hathaway, if the regions in which the proportion of iodine in the water is less than twenty-two parts to the million be charted, the map coincides closely with one in which high percentages of goitre in human beings is found. The result from McCarrison's researches in mountainous districts in India were of somewhat similar character. W. D. Keith, in the *Canadian Medical Association Journal*, April, 1924, stated that British Columbia lent itself to a marked incidence of goitre in man and animals; animals and human beings were sensitive to goitre in Pemberton meadows and it was noted that they did not bring the condition in with them, but acquired it shortly after coming to the valley. In this valley the further up the stream the more pronounced the disease. The only portion of the valley where poor sanitation existed, and where one would think that a contagion might prevail, was in the Indian village, and here no goitre was to be found, either in animals or human beings.

These observations, together with the fact that the incidence of goitre in the valley had disappeared entirely through the use of iodine, forces the conclusion that endemic goitre, as it was found in British Columbia, was an iodine deficiency disease.

THE OLD ORDER

The death of Dr. Dudley A. Sargent comes coincident with the decline and passing of the era of health by exercise in which he was so conspicuous a figure. Not that Sargent was by any means the only apostle of this movement or that his ageing had anything to do with its waning. The whole era began over a hundred years ago and was in its beginning inspired by high ideals of patriotism (or at least for maintaining national integrity) as well as ambition for individual perfection.

The practices in physical training grew out of military drill, and the evolution of elaborate apparatus followed in line, while the theories of the various schools were largely manufactured from the imperfect physiology of the day to fit the ideas and the ideals of the different schools of exercise. The warring systems which arose remind one strongly of the systems in medicine which are not yet fused into one and the benefits believed to result from nicely worked out gymnastic exercises, prescribed in tabloid doses, compare with the magical virtues which it was believed resided in many a drug. Sargent invented some machines for body development which have furnished all around exercise to millions, even if they have not produced all the results anticipated from them.

Sargent belonged to the group which developed pedagogical anthropometry to the highest degree. Besides bringing out the average measurements of college students (toward which mean many have striven, but to which none could voluntarily approximate to any appreciable extent) he pointed out that there are different types of humans—that the athlete who does good weight hurling is built differently from the sprinter and that the pole vaulter and high jumper have their peculiar anatomical attributes—in other words, that athletes are largely born and only polished by coaching.

Sargent lived to be over three score and ten, as did Dr. Hitchcock of Amherst and also Hartvig

Nissen, who passed away a few months since, but others of this school of health by exercise—Baron Posse, Jacob Bolin, Dr. Seaver, and Dr. Gulick—were not so long lived. Exercise is a good thing, but no amount of exercise will overcome faults of heredity, increase in any appreciable degree our resistance to bacteria, or make up for effects of faulty feeding and lack of rest or for injury from disease. Nor can it compensate to any extent for defective vision, deafness, or other bodily defect. Sargent was among those who recognized this to a degree, though the emphasis in his generation was too much on muscular exercise. It is fortunate that in present health work the even more important matters of feeding, rest, the removal of defects and prevention of infection, are being more adequately stressed.

Obituary.

SIR WILLIAM BAYLISS

Sir William Bayliss, whose death in London, announced recently, was perhaps the greatest of contemporary physiologists, and in addition a persistent searcher after knowledge in other realms of science and philosophy. William Maddock Bayliss was born in Wolverhampton in 1860 and was educated privately. He studied medicine but did not complete the medical curriculum. He then came to London and entered as a student at University College in 1881. He here fell under the influence of two teachers—Ray Lankester and Burdon Sanderson. He took the B.Sc. degree in 1882, obtaining the University Scholarship in Zoology. He now returned to medical work, studying physiology first under Burdon Sanderson and when the latter moved to Oxford, under Schafer. When he failed in the second M.B. anatomy examination, he abandoned the idea of a medical degree and devoted himself wholly to physiology. He followed Sanderson to Oxford, and took a first class Natural Science in 1888. He was an omnivorous reader, being of that inquisitive and acquisitive turn of mind which craved universal information. He browsed freely in the pastures of art, literature, science and philosophy and developed that wide range of knowledge and breadth of mind which distinguished him among his fellows.

On his return to London he took up his work again under Schafer at University College. In the early part of 1890 there was begun that colloboration with G. H. Starling which was productive of such fruitful results. Starling, who had been unable to obtain facilities for research at Guy's Hospital, where he was teaching physiology, came to University College, where he soon joined forces with Bayliss, a scientific partnership which lasted up to the time of Bayliss's death. To this collaboration the world is indebted for discoveries relating to the electrical phenomena of the heart, the action of the nerves on the heart, the regulation of the circulation, the movement of the intestine, pancreatic secretion, and the action of hormones.

Bayliss also carried out important researches on vasomotor nerves in conjunction with John Rose Bradford and with L. G. Hill on the circulation of the brain. In 1893 he wrote his classical paper on the depressor nerve and between 1901 and 1908 a series of papers on the origin and mode of action of vasodilator nerves. As said before, his knowledge seemed almost universal and any subject which interested him was a reason for experiment. In the laboratory at Hampstead, he made numerous experiments on various matters merely to satisfy his insatiable curiosity and with no thought of producing a paper or of publishing his results to the outside world. He also read and memorized scientific journals in many languages, his gift for memorizing being remarkable. However, all the knowledge gained from random experiments and somewhat promiscuous reading was not lost. If a knotty point cropped up in the laboratory the rule always was "ask Bayliss."

When Starling was appointed to the Jodrell Chair of Physiology in succession to Schafer, made professor of physiology at Edinburgh University, Bayliss came to the aid of his friend, and first as assistant then as assistant professor and finally as professor of general physiology, took an active part in the teaching work of the department. From 1904 on he published a long array of papers and monographs. These dealt especially with physicochemical problems of physiological importance, and with the mode of the action of enzymes, with occasional excursions into questions concerning dilatation of the bloodvessels.

In 1914 he brought out his book, *Principles of General Physiology,* a veritable landmark in the literature of the subject, and one of the most remarkable scientific books ever put to paper from several points of view. It is not only a valuable scientific work, but at the same time reveals a great deal of the personality of the author. It is in a way an autobiography, or rather the history of a mind and its deeds. From the preface the ordinary reader may obtain a clear conception of the author's views of physiology and of how these views may be brought into practice. The success of this book was immediate and striking. It was recognized by men of science the world over as the embodiment of the living spirit of physiology. In America, so highly is the book esteemed that there are two Bayliss societies, at the meetings of which the members discuss the various chapters of the work. And when through the illness of Bayliss the preparation of a fourth edition was delayed, the task was undertaken gladly by some of the younger physiologists under the editorship of Leonard Hill, in order to testify to the regard and homage in which the writer was held and also to render it easy for all workers in science to have access to a work which had proved already a fruitful source of inspiration and instruction.

During the illness of Starling in 1910-11, and during the war from 1915-19, Bayliss acted as head of the physiological department of University College and his activity and energy knew no intermission. He pursued special researches into the question of war shock and introduced a method of treating this condition by means of gum saline, which was employed at the front with much success.

In 1911 the British Royal Society awarded him its Royal Medal, and in 1919 the same society gave him the Copley Medal, the highest honor in its power to bestow. Honors galore came from foreign academies and from universities and learned societies at home. Wadham College, Oxford, his old college, made him an honorary fellow. He probably worked harder during the last few years of his life than ever before. He was chairman or member of numerous committees, treasurer of the Physiological Society, and in 1923 was appointed editor of *Physiological Abstracts*. In 1893 he married Gertrude Starling, sister of his friend and fellow worker, and was as happy in his home life as in his scientific work.

Bayliss was not only a discoverer and imparter of knowledge, but a source of inspiration. Like all truly great men Bayliss was modest and unassuming.

News Items.

Christmas Seals.—The National Tuberculosis Association is conducting its seventh annual Christmas seal sale, and has issued an unusually attractive design.

Plague Infected Squirrels.—Plague infected squirrels have been found in San Luis Obispo County, California, according to reports of the United States Public Health Service.

Red Cross Conference.—The American Red Cross held its fourth annual meeting at Washington, D. C., early in October. Dr. Livingston Farrand of Cornell and Dr. Charles P. Emerson of Indiana University, were among the speakers.

Chair of Neurology.—A new chair has been established at the Medical College of Virginia, for neurological surgery, to be held by Dr. C. C. Coleman as professor and Dr. J. G. Lyerly as associate.

Child Health Association Appointment.—Miss Emma Dolfinger has been appointed as director of the health education division of the American Child Health Association, to succeed Miss Sally Lucas Jean.

Texas Medical Examinations.—The Texas State Board of Medical Examiners will examine applicants, at Dallas, November 18th, 19th, and 20th. Application should be made to the secretary, Dr. T. J. Crowe, Mercantile Bank Building, Dallas.

Five o'Clock Lectures at the Postgraduate.—A tentative list has been announced for the five o'clock Wednesday afternoon lectures of the New York Postgraduate Medical School and hospital. These include: Diagnosis and Treatment of Uric Acid Conditions, by Dr. Arthur F. Chace; Infections of the Hand, by Dr. John J. Moorhead; Treatment of Colitis, by Dr. Ludwig Kast; Röentgen Examination of the Gastrointestinal Tract, by Dr. William H. Meyer; Rehabilitation Surgery, by Dr. Fred H. Albee; Toxemias of Pregnancy, by Dr. Harbeck Halsted; Treatment of Essential Hypertension, by Dr. Herman C. Mosenthal; Treatment of Diarrhea in Children, by Dr. Roger H. Dennett; and lectures by Dr. L. E. Lafetra and Dr. Charles Gordon Heyd, titles to be announced.

Medical Centre for New York.—The Board of Managers of the Presbyterian Hospital, New York, has announced its decision to erect a building jointly with the College of Physicians and Surgeons of Columbia University, at Broadway and 168th Street (the old American League Baseball Park.) Plans for this cooperation were tentatively made about three years ago. The Presbyterian Hospital section will cost $7,000,000, of which $2,500,000 is available, leaving $4,500,000 still to be raised. A campaign to raise this fund will shortly be started,—the first public appeal ever made by this hospital. The section of the building to be occupied by the College of Physicians and Surgeons is to cost $3,000,000, which has been subscribed. Besides wards accommodating over six hundred patients, there will be a private pavilion for one hundred and twenty-five patients. Facilities for research are also to be provided.

New University Hospital.—The hospital for the medical school of the University of Wisconsin, known as the "State of Wisconsin General Hospital," is now being opened for patients. Its capacity is over three hundred beds.

Health Demonstration.—The Milbank Memorial Fund has announced that it has selected for purposes of an intensive health demonstration over a period of years, the district bounded by Fourteenth and Sixty-fourth streets, and Fourth avenue and the East River.

Centennial of Jefferson Medical College.—Exercises were held on September 23d, in the clinical amphitheatre of the new hospital building of the Jefferson Medical College, Philadelphia, to mark the opening of its hundredth year. Dr. Bowman C. Crowell gave an address on A Century of Progress.

Census of the Blind.—The New York State Commission for the Blind states that its census shows 8,001 blind persons in the state, of whom 3,728 live in New York City. The commission also states that the number of persons with serious visual defects is much larger than the number who are blind.

Sickness Index.—The United Hospital Fund, through its Hospital Information Bureau, is planning a study of the amounts and kinds of illness given hospital treatment. Six large hospitals, members of the fund, have agreed to furnish statistical information of this type, and it is believed that present hospital facilities can be better adjusted, and future facilities planned to meet their exact requirements.

Cornerstone of Rush Medical College.—The cornerstone of Rush Medical College, laid November 20, 1875, has been removed due to wrecking operations. The box was opened by the Grand Master of the Masonic Lodge of Illinois, at a ceremony attended by prominent Chicago people. It contained copies of the *Chicago Medical Journal* of 1867, copies of Chicago newspapers, the city directory, tourists' guide for 1875, pictures of the faculty of the college and the valedictorian address of 1871, also the college charter.

Coming Meetings of Societies.—The New York State Association of Public Health Laboratories will hold a mid-year meeting November 5th, at the State Laboratory in Albany.

The Medical Society of Virginia is meeting from October 14th to 17th, at Staunton, Virginia. Dr. A. J. Ochsner, of Chicago, Dr. John O. Polak, of Brooklyn, and Dr. Daniel A. Orth, of Chicago, have been invited to speak.

The National Social Hygiene conference will be held at Cincinnati, November 19th to 22nd, marking the tenth anniversary of the society. Dr. Hugh S. Cumming, Mr. Lee K. Frankel, and Mrs. Clive Neville-Rolfe, general secretary of the National Council for Combating Venereal Disease, London, are among the speakers.

The American Public Health Association will hold its fifty-third annual meeting in Detroit, October 20th to 23rd. Dr. T. Madsen, chairman of the health section of the League of Nations, will be one of the speakers. Dr. R. M. Olin, health commissioner of Michigan, is chairman of the local committee of arrangements.

Personals.—Dr. I. M. Kolthoff, a noted chemist of the University of Utrecht, has recently been in New York.

Professor Costa Forstell, a Swedish röntgenologist who has been in this country, has returned to Sweden.

Dr. W. B. Hardy, a British chemist and biologist, has recently been in New York.

Dr. Ethel D. Humphrys has been appointed acting city manager of health and charity of Denver, Colorado, succeeding George A. Collins, who has become superintendent of the new University of Colorado hospital.

Dr. William R. Davidson of Evansville, Indiana, has been appointed president of the council of the Indiana State Medical Association.

Dr. John Albert Key, of Baltimore, is to have charge of research work at the Shriner Hospital for Crippled Children, at St. Louis.

Dr. Robert J. Wilson has been honored by a gift of an illuminated autographed volume by his fellow workers at the bureau of hospitals, New York City department of health, on the occasion of his retirement after twenty-eight years of service.

Dr. Edward Hoening has been appointed associate gynecologist to the Jewish Memorial Hospital of New York.

Foreign Correspondence

PARIS LETTER

(*From our own correspondent*)

PARIS, *September 6, 1924.*

A GENERAL ONSLAUGHT

For some time past, there has been a tendency on the part of the French press, or at any rate on the part of certain organs thereof, to imply that all is not for the best in the French medical world. With the coming of summer, and the consequent dearth of news, the tendency became more marked, until it developed into a regular offensive under the leadership of the *Oeuvre,* a leading morning paper of strong Radical-Socialist views. The gravamen of the charge is that too many physicians and surgeons in this country at the present moment are of the get rich quick kind, that they give precedence to money before patient, and that, generally speaking, there is a slackening of professional conscience. As is customary in all campaigns, there is a foundation of fact in these sweeping indictments and a very exaggerated superstructure. On final analysis, the most serious arraignment against the profession as a whole relates to dichotomy, which is the learned word used here to signify splitting fifty-fifty between surgeon and attending physician. And when you come to rock bottom the World War is to blame once again.

AN OVERCROWDED PROFESSION

The fact is that there are in France too many physicians and too many surgeons, both native Frenchmen and foreigners. Right here it is as well to open a parenthesis. There are two categories of foreign practitioners. There is nothing to say against the American and English doctors in France, whose number has increased simply in proportion to the growth of the colonies of residents from the United States and from Great Britain. Their *clientèle,* on the whole, is made up of their fellow countrymen and countrywomen. They are admittedly most honorable practitioners, and there is nothing but praise for the American Hospital at Neuilly-sur-Seine as well as for the Hertford British Hospital. The American and British physicians and surgeons in France are quite content to remain American or British physicians or surgeons. Indeed, it is their pride thus to remain. Not so with other nationalities. More than ever do the medical schools of Nancy and Montpellier include on their rolls the names of foreign students seeking the French degree. The former is favored by men from Near Eastern countries and the latter by Turkish and Egyptian would-be doctors. This was already the case before the war. Many a brass plate in Cairo bore the indication "M.D. of Montpellier University."

COMPETITION WITH THE FRENCH

Many of these men become naturalized French citizens. Some return home, but a large proportion remains in this country, to practise in the large cities. Already the number of French native born practitioners is too large; the foreign element comes to swell an overcrowded profession. Moreover, it is a peculiar psychological fact that many patients will be attracted by a foreign name who would hesitate to believe in the superlative qualifications of a fellow countryman. In these conditions, there is little love lost between the French physician and his foreign confrère whom he is inclined to look upon as an interloper. In most instances both classes served in the war; the former was drafted and the latter volunteered. After the armistice the foreign category returned to civilian practice, of necessity, the Army Medical Service not being normally open to them. The native born physicians also left the army because the financial inducements were insufficient. Both doffed the uniform and promptly started a war of competition for practices.

OPPORTUNITIES FOR FRAUD

The struggle, it must be admitted, was not always honest. Moreover, postwar conditions lent themselves to fraud. On the side of the combatants, there was State payment to doctors who attended the thousands of maimed and gassed. So pressing was the need of medical attention for all such that it was not possible for government departments immediately to devise adequate regulations. As a consequence physicians and pharmacists in some cases—the most flagrant instance led to wholesale prosecutions at Marseilles—leagued themselves for the purpose of extracting unjustified fees from the State. On the side of the noncombatants there was the application of laws for the insurance of employees against accidents. In this instance also, the same reason—insufficient time for the elaboration of comprehensive regulations—the door was left open for abuse. In this connection, too, prosecutions have been numerous.

TEMPTATION IS STRONG

Not that the black sheep are numerous by any means, but temptation is strong, and there are always feeble brethren who fall by the wayside. Few start out with bad inclinations. The majority succeed in resisting. Yet too many succumb to the wiles of dichotomy. The young doctor, animated by the best of intentions, finds that a brass plate at his door is not sufficient to attract patients. When the first one finds his way to his consulting room the temptation is great to magnify his ailment. With a clear conscience it is possible to argue that no diagnosis is infallible. The symptoms generally may point to a benign malady, yet there is a minor, very minor indication of the possible presence of something more serious. The more serious may become most serious if not attended to. A slight operation tomorrow may avoid a grave operation at a later date. And surgeons split fees. It takes character to stop right here and to prescribe liniment instead of calling in a specialist.

SOME OF THE CHARGES

Laymen, particularly of the journalistic persuasion, assert that too many young physicians have not the force of character necessary to repulse temp-

lation. They declare that patients are inveigled into expensive consultations and operations when there is no necessity therefor; that long treatments are prescribed in order to obtain fees from patients who could be cured in relatively short time; that the simplest of operations is magnified, for the same purpose; that, in a word, too many physicians and surgeons are out to make money.

As usual, while there is no smoke without fire, there are too many critics prepared to dump down armfuls of damp straw on the slightest blaze. That there are black sheep in the profession is not denied. There are in all professions. That the war has led to the increase of such black sheep is also admitted, but in spite of all this the proportion of chaff to grain is very small, and the black sheep in a flock are counted on the fingers of one hand. On the other side of the account must be set the ever increasing number of doctors who devote themselves to the public good, frequently for no fee at all; the numerous leaders of the profession who give their services free of charge in hospitals and poor-houses, and the hundreds of humble practitioners who for a small income give their whole time, much of their health and too frequently their lives also for the sake of those who consult them. In a word, the attack turns out to be chiefly a newspaper scare.

TISSUE GROWING

As a result of experiments which have lasted several years on the cultivation of animal tissues outside the organism, M. Champy, a well known physiologist of the Collège de France, has obtained results which lead to the belief that the mystery of the origin of cancer is on the point of solution.

M. Champy's experiments are a continuation of those of Professor Carrel in the cultivation of living tissue and the indefinite multiplication of cells detached from the body. It was thought after Professor Carrel's early investigations that the cells went on reproducing their own species—in other words, that fragments of the kidneys or of the thyroid gland reproduced renal or thyroid cells. According to M. Champy this is not the case. Instead the cells become modified, or, in the physiologist's own words, they "differentiate" and form cells which possess all the properties of cancerous cells. M. Champy thinks that this disproves the theory held for a long time that cancer was due to a microbe never yet isolated, and goes to show that the disease is engendered by the organism itself as a result of functional disequilibrium.

REPORTABLE DISEASES

The *Journal Officiel* of the French Government recently published a list of diseases which the doctor is obliged to report to the Health Department, as follows: Typhoid fever, exanthemic typhus, variola or varioloid, scarlet fever, measles, diphtheria, suette miliaire, cholera and *maladies choleriforme,* pest, yellow fever, dysentery, puerperal infection and ophthalmia neonatorum, cerebrospinal meningitis, acute poliomyelitis, trachoma, undulant fever; to which is added the following list, the reporting of which remains to the discretion of the medical attendant: Tuberculosis, whooping cough, influenza, pneumonia and bronchopneumonia, erysipelas, leprosy and favus or ringworm.

GENEVA LETTER

(From our own correspondent)

GENEVA, *September 1, 1924.*

PHLEGMON OF CAROTID

Richard reported the case of a patient operated on for a phlegmon of the carotid and towards the end of the operation developed syncope. After several various attempts had been made to deal with the syncope, all of which were fruitless and consumed altogether twelve to fifteen minutes, Richard gave an intracardiac injection of two c.c. of adrenalin solution 1/1000. The heart beats, although weak, reappeared and then ceased. A second injection into the heart caused the beats to recur, but this time they were strong and regular. Unfortunately respiratory syncope persisted and the patient died. Although this case was only a partial success, nevertheless it demonstrates the favorable action of injections of adrenalin into the heart when very urgent indications for this procedure prevail, and it would seem indicated in future cases of severe operative syncope to resort to it without loss of time as occurred in the case reported.

PAINFUL SACRALIZATION

In a recent thesis (Paris, 1923), Meynadier has presented a very complete study of painful sacralization of the fifth lumbar vertebra. This condition may occasionally coincide with a posterior spina bifida. The pathogenesis of this painful anatomical process is probably not due to a single factor, because in the more serious cases the fifth lumbar root is involved. The symptomatology of painful sacralization is varied and rich, although Bertolotti's syndrome still possesses a relative value.

Before making a diagnosis of painful sacralization those affections which may simulate it must be ruled out, and in this respect radiography will greatly aid in making a differential diagnosis, but it must be carried out with a strictly rigorous technic. Only cases of authentic sacralization are to be operated on, with absence of associated lesions other than a typical and complete scoliosis offering a serious symptomatology. It is to be remembered that certain very marked sacralizations with partial fusion of the sacral wing—and these are among the most severe cases—may not be operable. In general, when properly selected, the operative results are distinctly favorable.

SEMIOLOGY OF NEOPLASMS

I would call attention to the recent studies persued by Guillain on the semiology of neoplasms of the corpus callosum. Tumors of the splenium of the corpus collosum make themselves known by symptoms of intracranial hypertension with headache, vomiting and occasionally papillary stasis, also early mental disturbances, sometimes resembling those of general paralysis, consisting of amnesia, peculiar acts, emotional indifference, disorientation, torpor interrupted by periods of agitation, absence of systematized delirium, but with mental disturbances ending in a true state of dementia. Motor disturbances, apparently due to extension of the neoplasm to the pyramidal fibres or the central gray nuclei, also are met with, and sometimes phenomena of

apraxia. Aphasia never occurs, and rarely is there paralysis of the basal cranial nerves.

Study of the cerebrospinal fluid, especially the negative Wassermann reaction, and colloidal benzoin reaction, allow one to eliminate the diagnosis of general paralysis and syphilis of the neuraxis. It is preferable not to resort to the socalled therapeutic tests with salvarsan or other antisyphilitic medication.

LATIN AMERICA LETTER

(*From our own correspondent*)

Balboa Heights, Canal Zone, *August 4, 1924.*

MEDICAL INSPECTION AT CALLAO, PERU, DISCONTINUED BY UNITED STATES

Doctor Castro Gutierrez, acting assistant surgeon, United States Public Health Service, has been relieved from duty at the U. S. Consulate in Callao. The service of medical supervision by the United States has been temporarily discontinued. All cargo from Callao destined to the Canal ports and to those in the United States must be fumigated for the destruction of rats. This supervision of fumigation will be continued by the local authorities at Callao and Paita and will be certified to by the United States consuls at these ports. The last case of human plague in Paita occurred during the month of March, 1924.

HEALTH OFFICER OF PANAMA VISITS EUROPE

Dr. Henry Goldthwaite, health officer of Panama City, accompanied by Mrs. Goldthwaite, has left the Isthmus for a four months' sojourn in Europe. Doctor Goldthwaite is taking a well earned leave of absence and will visit the principal cities in southern Europe. Later he and Mrs. Goldthwaite will visit Admiral Mark Bristol, American High Commissioner of Constantinople.

PANAMA'S CRIPPLED CHILDREN TO RECEIVE AID

Major E. A. Bocock, M.C., U. S. A., superintendent of the Santo Tomas Hospital of Panama City, in a recent address before the Rotary Club of that city, made a plea for a drive by the club to obtain the names and addresses of the crippled children of the Republic. It is his intention to reach these unfortunate children and have them brought to the hospital for surgical relief. This will be done without expense to the parents. Major Bocock has been superintendent of the hospital since July, 1919, and through his efficient administration has gained the confidence and admiration of the government officials of Panama, especially of His Excellency President Porras. He was to have been relieved from duty in July for the purpose of a detail to the Army Medical School at Washington, D. C., but on the request of the Panama Government his orders were revoked, in order that he may continue in the service of the Santo Tomas Hospital. An entirely new hospital plant is being constructed which will undoubtedly be the best appointed institution in South America. It will be ready for occupancy about October 1st.

FINAL VERDICT ON PANAMA'S WHITE INDIANS

The three "white" Indian children whom Richard O. Marsh took from Panama have been proclaimed by medical and other experts in the States to be none other than albinos. Mr. Marsh took these children to the States and presented them before a group of scientists for the purpose of substantiating his claim that he had discovered a new race—a tribe of White Indians. The opinion of the experts of the United States coincides with that of the medical fraternity of the Canal Zone and Panama. The discovery of albinism among Indians of the Darien region is not a new one. It is claimed that Columbus observed white Indians and that they were later seen by Balboa and many other explorers of olden and modern times. An account by the explorer Wafer who penetrated into the Darien of Panama in 1681 reads as follows: "They are white and are of both sexes; yet there are few of them in comparison to the copper colored. Their skins are not of such a white as those of fair people among Europeans, yet some tincture of a bluish or sanguine complexion. But 'tis rather a milk white, much like that of a white horse." It is understood that Mr. Marsh intends to return his group of Indians to their native country in a very short time.

AVOIDABLE TRAFFIC ACCIDENTS IN THE CANAL ZONE

During the fiscal year ending June 30, 1924, there were 280 traffic accidents on the Canal Zone or an average of twenty-three a month, resulting in the death of six persons and the injury of fifty others.

The classification of the causes shows that practically all of the accidents were avoidable and were due to careless and reckless operation of vehicles. The causes of the accidents were as follows: Intoxicated drivers, five; reckless driving, 194; careless driving, fifty-seven; inexperienced drivers, three; careless bicyclists, two; defective roads, two; defective machines, three; intoxicated pedestrians, one; irresponsible children, one. Of the 280 accidents, collisions occurred in 258. Damage to property resulted in 259. Thirty-two persons in vehicles were injured; eighteen pedestrians were injured and six deaths resulted. Of 418 vehicles figuring in the accidents 154 were driven by their owners and 274 were driven by someone other than the owner.

TYPHOID FEVER IN HAVANA

It is reported that typhoid fever is prevailing in epidemic form in Havana. According to Commander R. E. Old, Medical Officer of the *Rochester*, who has just arrived from Cuba, over four hundred cases have been reported in the city of Havana to date. There has been an average of eight deaths per day. It seems probable that this is a water borne epidemic. The available supply of safe drinking water is not large enough to meet the demands of the city. It is also claimed that ice is made from untreated water and is a constant source of danger.

There is also reported a smaller epidemic in Costa Rica, especially in San Jose and Cartago and their outlying districts. The *Rochester* has just completed a cruise which included a number of the ports of the Caribbean Sea, and an interesting report of the sanitary conditions has been written by the medical officers of the ship.

MEDICAL RECIPROCITY IN LATIN AMERICA IS URGED

The necessity of increasing the efficiency of Pan-American medical and public health work by means

f medical reciprocity, and the establishment in Pan-ma of a Pan-American Examination Board or other uthorized agency was urged in resolutions passed y the International Conference on Health Problems i Tropical America, held recently in Kingston, Ja-maica. Copies of resolutions passed were brought the Isthmus yesterday by returning delegates. he resolutions are as follows:

In view of the increasing realization of the fact that dis-se has no national boundaries and that it is in the interest f every country to secure a high standard of work in cura-ve and preventive medicine, the International Conference on ealth Problems in Tropical America, which has been visit-g Jamaica and various Central American republics, is esirous before it dissolves to set out recommendations, the loption of which, would, in their judgment, greatly increase ie efficiency of Pan-American medical and public health ork.

As a means to this end, they are impressed with the im-ortance attaching to extension of facilities for interchange medical work between the different states concerned.

The following statement indicates in part the existing posi-on as to medical reciprocity between American republics. Guatemala, San Salvador, Honduras, Nicaragua and Costa ica have formed a Central American medical reciprocity. mong these republics a large amount of medical reciprocity ready exists.

Similarly in South America there is more or less medical ciprocity between Colombia, Venezuela, Ecuador, Peru id Bolivia.

Some further action in the same direction was initiated at Pan-American Congress held in Uruguay in 1910.

Resolution 1: In the opinion of this conference action in ie direction of further reciprocity could most appropriately taken by the Pan-American Union.

Resolution 2: The conference is of the opinion that in any ange that takes place reciprocal practice between republics ould be subject to the condition that the physicians ex-mined reach an acceptable standard of training and ex-nination.

Resolution 3: The conference is of the opinion that at ie earliest practicable moment it is desirable to establish some central point, or points, a Pan-American Examina-on Board or other authorized agency, enforcing a high andard. Panama being recommended for the first centre r such a Board because of its accessibility.

Resolution 4: The conference is of opinion that any aduate of a medical school, wherever situated, enforcing ch a standard as is indicated by Class A of the American edical Association, who also holds a diploma from the amining body named above, should be accepted for licen-re for practice in any of the signatory republics.

Resolution 5: The conference is also of opinion that as immediate step towards wider medical reciprocity in an-America the National Board of Medical Examiners of e United States should be asked to initiate at certain ntres accessible to Latin America, examinations in Spanish in the official language of any country, in addition to the esent examinations in English.

The conference recommends that a copy of this memo-ndum should be sent to the Pan-American Union, with e request that the Union should communicate its con-nts to the appropriate Government department of each of e republic concerned, to the Rector of the National Uni-rsity of each republic where such an institution exists, the National Board of Medical Examiners of the United ates, and to others interested.

EDICAL ASSOCIATION OF THE ISTHMIAN CANAL ZONE

The 211th meeting of the Medical Association of ie Isthmian Canal Zone was held at the Ancon Hos-tal on July 15, 1924. The program included the llowing papers: Some Observations of Field ervice in Panama, by Captain E. H. Perry; The orto Rican Soldier from a Medical Standpoint, by ajor Clarke Blanco; Duties of a Flight Surgeon, Captain A. W. Smith. These interesting papers were the subject of much discussion by members of the association.

DEADLY FUMES IN THE COLOMBIA'S HOLD

Four negro laborers of the Canal were recently killed by gases emanating from decomposing cargo in the hold of the steamship *Colombia*. These gases, largely hydrogen disulphide, were evolved from rotting beans and green coffee. The *Colombia* had been on the rocks for the past three weeks off Cano Island in the Pacific and was brought to Balboa for dry docking. Six men were in the hold at the time of the accident, but two managed to get out before being fatally overcome. An expert diver was then lowered into the hold and succeeded in getting ropes upon the men. All were dead when brought to the deck of the ship. The diver was also overcome but was hauled out and given artificial respiration.

MALARIA ON THE ISTHMUS

It is interesting to note that in spite of mosquito eradication work and constant extension of sanitated areas of the Canal Zone the malarial incidence has been on a steady increase during the past five years, according to records of the Health Department. Three factors contribute to this increase: The opening of land for agricultural purposes; extensive dredging in Gaillard Cut, unavoidable night work; the military population. The high rate among the military population, which greatly exceeds the combined rate for all others, is due largely to the necessity of carrying on practice maneuvres in unsanitated areas and to the enlisted man's propensity for wandering about the country in all seasons and at all hours, as well as to the location of some of the army posts and naval bases, least favorable for sanitating.

EMISSARY OF THE AMERICAN COLLEGE OF SURGEONS

Dr. Edward I. Salisbury, associate director of the American College of Surgeons, director of Inter-American Affairs, is spending a few days on the Isthmus en route from Peru to Jamaica, where he will attend the Conference on Tropical Medicine in Kingston. Dr. Salisbury is engaged in a survey of the hospitals of Central and South America with a view to their ultimate standardization on a basis similar to that being carried into effect in the United States and Canada. He is at present seeking a solution to their most urgent need, the establishment of a higher system of nursing.

YELLOW FEVER INVESTIGATIONS IN SAN SALVADOR

Dr. C. P. Knight, Chief Quarantine Officer of the Panama Canal, has returned to the Isthmus after completing an investigation of reported yellow fever in San Salvador, the capital of the Republic of El Salvador. Dr. Knight arrived in San Salvador on July 3, 1924, where a conference was immediately held with the President of the Republic and the Chief of the Health Depatrment. A thorough investigation was then inaugurated. During the month of June there were reported two deaths and seven cases of a disease which simulated yellow fever in many particulars, but after a thorough investigation, grave doubt exists as to the actual presence of the dread disease. No new cases occurred during the investigation, but further studies are being carried on and will be the subject of future correspondence.

Book Reviews

PSYCHOANALYSIS

Essays in Applied Psychoanalysis. By Ernest Jones, M.D. President of the International Psychoanalytical Association and of the British Psychoanalytical Society. The International Psychoanalytical Library, No. 5. London and Vienna: The International Psychoanalytical Press, 1923. Pp. 454.

Psychoanalysis and Æsthetics. By Charles Baudouin. Translated from the French by Eden and Cedar Paul. New York: Dodd, Mead and Company, 1924. Pp. 328.

These two volumes invite comparison through their similarity of interest and yet through the contrast in the attitudes of their authors. There is a difference, also, to some extent, in the nature of their subject matter. The latter book is written by an author first of all esthetically attuned. His translators, in their excellent introduction, have styled him both a psychologist and a poet. Psychoanalysis has illuminated his way into a more penetrating understanding of the inner life of the poet he studies and of the significance of this poet's writings. Yet there is an esthetic check upon making the interpretation of these as clear and bold as it might be. Jones, on the other hand, moves more familiarly among the facts which represent the findings of psychoanalysis and points them out with incisive strokes. Dealing with the crudely concrete elements which underlie poetry, superstition and religion, he, nevertheless, treats them with a delicacy born of the recognition of their fundamental and undeniable significance in the foundations of all cultural products. His is, therefore, a bolder frankness, but none the less truly esthetic.

Baudouin has not been unmindful of these elements which seem at first sight contradictory to the very thought of esthetics. He has not dared, however, to discover and bring them into definite expression as Jones never hesitates to do. Baudouin acknowledges that he avoids that widespread sexual interpretation which Freud attributes to the matter under repression in the unconscious. He willingly admits the Œdipus complex functioning in the life of Verhaeren, the poet whom he studies, and finding expression in his work. The stumbling block seems to be in the more precise nature of the elements of infantile sexuality bound with the Œdipus complex. And it is just in the revelation of these that Jones renders his signal service in the investigation of his material.

Baudouin comes nearer to this than he discerns, when he proceeds to the actual analysis of many of Verhaeren's expressions. In the poet's own lines, which Baudouin has introduced generously into his work, the reader finds more in the symbolism than his expounder has dared to see. Baudouin frequently stops at a question, which might be at least further pressed toward its answer. Often there is generalization, when the fullness of the poet's symbol suggests still deeper concrete analysis. This more concrete detail of the unconscious would be illuminating alike for the earlier conflict through which the poet passes and for the victory which he achieves. At times, Baudouin touches more definitely upon this detail, but too often he has missed elements which the poet's symbols thrust vividly before us. Baudouin has rendered a positive service, however, in leading forward in the direction of this more fundamental interpretation of literature. He has given a specially clear analysis of the Œdipus theme in the poet's work, as found in his lyric dramas, the "Œdipus trilogy," which represented one period of his creative work. Baudouin has thus contributed, by his analytical insight and by the clarity of his intellectual thought, both to psychoanalytical psychology and to esthetics. He lays especial emphasis upon the service of the symbol to the poet himself and finds in the study of this the record of the conflict through which the poet finally attains a higher stage of psychic evolution. Baudouin defines at length the symbol and its use in the light of this, its function in psychic evolution. He discusses the condensations, displacements, transference—not all in the strictly Freudian sense—which the symbol represents. Through these, he shows, Verhaeren expressed the conflict of his inner life, his regressive introversion, and finally the winning of a healthy extroverted attitude toward the external world.

Jones has presented us with a series of studies which had formerly been printed separately, most of them not in English. Together they form a comprehensive investigation into the unconscious motives that influence human lives. They reveal concrete elements, repressed and forgotten by consciousness, but possible of rediscovery in the most trivial or the most cherished beliefs of mankind. He has devoted some of his essays to the study of literary subjects. His investigation of Hamlet's psychic situation, a puzzle to critics throughout the centuries, may certainly rank as a classic among all former attempts to explain it. Jones reviews some of these former attempts to resolve the mystery which Shakespeare created, and then proves how much illumination psychoanalysis is able to throw upon the obscurity.

Jones gives also a brief study of the unconscious motivation of "dying together," using as his material the strange death of the poet von Kleist and a mysterious occurrence at Niagara Falls. He gives us insight into Andrea del Sarto and Louis Bonaparte in their peculiar psychic situations. He discusses the "God complex" which resides in man. He submits to a far more comprehensive study the symbolic significance which has always surrounded salt, but deepens and extends the examination of unconscious valuations and conceptions in his still more elaborate study of the Madonna's conception. This is a fearless revelation, not alone of those elements of the unconscious which our other psychoanalytically inclined esthetic writer finds it hard to accept. It is a fundamental searching into the basic material out of which the most spiritualized religious conceptions are built. And this is to find the extreme infantile character of this material as well as the infantile nature of the exalted psychic structures which have been elaborated both to satisfy and to conceal the infantile concepts. Yet to know these

things as Jones searches them out and sets them forth, is not to debase the higher product. It is only to aid in the "transformation of religion" to something more real, to aid in the "supersession of the pleasure principles by the reality principle." Further brief essays, one upon religious belief, two sociopolitical, further advance this latter aim.

NEUROLOGY

Diagnosis of Nervous Diseases. By Sir James Purves-Stewart, K.C.M.G., C.B., M.D.Edin., F.R.C.P. Sixth edition, revised. New York: E. B. Treat and Company; London: Edward Arnold and Company, 1924. Pp. 648.

Lehrbuch der Nervenkrankheiten. Für Studierende und praktische Arzte, in 30 Verlesungen. Von Robert Bing. Dritter, vermehrte und umgearbeitete Auflage. Mit 184 zum Teil mehrfarbigen Abbildungen. Berlin und Wien: Urban und Schwarzenburg, 1924. Pp. 709.

So long as Purves-Stewart remains in the realm of organic neurology we can follow him and respect his carefully compiled textbook. But when he attempts to wallow about in the functional field of the psychoneuroses his efforts are pathetic. The reader who desires a convenient textbook on neurology and does not feel the need of information in regard to the functional nervous disturbances will do well to depend on Purves-Stewart. But the book as a whole, in the analogy of a team seems to resemble a good horse hitched to the side of a decrepit donkey.

Most of what has been said of Purves-Stewart may be repeated about Bing. No more careful worker than Bing could be found in the organic field. In addition, in this last edition of his book he gives an excellent résumé of the findings in the hysterical psychoneurotic group. However, when it comes to accepting his halfbaked idea on the etiology and treatment of the psychoneuroses, a line must be drawn.

MENTAL DISEASES IN SWEDISH ARMY AND NAVY

Om Psykisk Undermalighet Och Sinnessjukdomar. Bland Svenska Arméns Och Marinens Manskap. Av Harald Fröderström. Stockholm: P. A. Norstedt & Söner, 1913. Pp. 168.

The author in this thesis which he presented for promotion to the degree of Med. Dr. at the Royal Medical College, Stockholm, May 6, 1913, deals with psychic abnormalities and mental disease in the Swedish Army and Navy. He reviews the statistics regarding mental abnormalities in many European countries as well as Sweden, and finds that these have been uniformly on the increase during the last two or three decades. Some observers attribute the fact to the social, political, and cultural conditions of modern civilization, which place higher requirements upon the intellectual capacity, especially in large cities and industrial centres, while others ascribe the upturn in the statistical curve of psychomorbidity from one to nearly three per cent. in Sweden, to the fact that modern institutions with their increased facilities attract and harbor many mental cases that previously were cared for privately.

As to the relation of war to psychic disturbances, it has been definitely shown by statistics—what would seem to be a natural inference—that the ratio of these is increased, even doubled, not only among the combatants but also among the afflicted civilian population of belligerent countries.

In his survey of the psychically abnormal contingent that enters into the personnel of the Swedish army and navy, the author groups these incompetents under two heads, the mentally deficient and the mentally diseased, the latter showing a concrete symptomatic entity with manifest disturbance of cerebral function. Under the former he includes idiocy, imbecility, debility (psychophysical) and depravity. Under the latter appear infantile psychoses, psychoses of puberty, schizophrenia, manic depressive states, transitory psychoses and dromomania. He cites a long list of case histories of his own and other observers. From comparative statistical studies the inference is drawn that Sweden in case of war would count on a psychomorbidity of two per cent. of the personnel of its military forces.

The author urges the need of a more effective administration, of competent psychiatrists and greater facilities in handling the mentally deficient, not only in the interests of these latter, but in the interests of military discipline and efficiency.

MENTAL DISEASES

Mental Diseases. A Public Health Problem. By James V. May, M.D. Boston: Richard G. Badger, 1924.

The most useful purpose of this book has been accomplished through the combined approach to the problem of mental disorders, namely, the psychological, economic and social, as well as a presentation of the organic conditions accompanying mental disorders. This has been done with marked success, no phase being unduly overemphasized, and a unity preserved which is gratifying. The work will fill a distinct niche in the field of psychopathology and be of service to the social worker, physician, jurist, publicist, and educator. It is fortunate indeed that a book of such wide influence should be so sensibly written and in so lucid a manner.

ORTHOPEDIC SURGERY

Selected Essays on Orthopedic Surgery. From the writings of Newton Melman Shaffer, M.D., F.A.C.S. Illustrated. New York and London: G. P. Putnam's Sons, 1923.

In reviewing this book one is struck by the marked similarity to the present day understanding of the diseases discussed by the author. In one or two details only is there any marked difference. For example, in the treatment of the tuberculous abscess, noninterference is advised irrespective of the fact that the abscess may rupture any moment. It is hard to understand how secondary infection can be eliminated when the abscess is allowed to rupture spontaneously, in preference to a paracentesis, which he forbids because secondary infection may be introduced that way.

His discussion of hip joint disease is a pleasure to read. The symptoms are thoroughly analyzed and discussed. The treatment, especially in the early stage, when flexion deformity is present, is given an undue amount of attention. In our opinion this is the only book which has satisfied our idea of the importance it really deserves.

Irrespective of the fact that the nomenclature of the essay on nondeforming club feet is not exactly correct, it brings to light a series of conditions which could otherwise not be emphasized were they to be placed in their real respective diseases. Much atten-

tion is paid to the mechanical treatment of club feet, a procedure which is not much in vogue today.

His emphasis on the short tendo achilles and its rôle in the production of flat foot deserves particular attention, as its importance in the treatment has only been recognized for a comparatively short time. The abduction treatment for fracture of the neck of the femur is being hailed today as a specific, when the origin of this procedure was introduced many years ago by Shaffer. The article on the stretching of the ligamentum patellæ is quite interesting. In fact little mention of it is made in any other orthopedic book. Its play in the pathology of internal derangements of the knee joint has been brought out clearly here.

It must be gratifying to Shaffer in his perusal of other orthopedic books to see how little has been added to his essays. When we realize that in the author's time orthopedics was in its embryonic stage compared to the present time, then no greater tribute can be paid to him than to say that the book is worth while reading to have a real conception of modern orthopedics.

PUBLIC HEALTH SERVICE ACTIVITIES

Annual Report of the Surgeon General of the Public Health Service of the United States for the Fiscal Year 1923. Washington: Government Printing Office, 1923. Pp. 316.

This report for the year 1923 is unusually full and treats in considerable detail the work of the various divisions of the Public Health Service. The statement is made that the sanitary reports of the country as a whole show that health conditions throughout the United States have continued as satisfactory as in recent years, in spite of the widespread conditions of certain communicable diseases abroad. This lack of disease conditions is probably due to the increasing interest on the part of the public in health improvements, and to the enforcement of the international sanitary agreements and the maintenance of the national quarantine system, permitting no cases of the major quarantinable diseases to gain access to this country during the year. An outbreak of yellow fever in Colombia and other localities and a high mosquito index in various ports of tropical America, made it necessary to impose somewhat more stringent quarantine restrictions than in previous years. The recognition of the Government of Mexico, however, and the improvements in sanitation contemplated for Mexican ports may make possible the removal of some of these restrictions.

Both human and rodent plague appear to have been eradicated in the United States, except in the case of infected ground squirrels in California, and all antiplague measures, except in that State, have been discontinued. Only one human case of plague occurred during the year. Through the active work of the maritime quarantine stations at domestic ports, and of the medical officers stationed at foreign ports, much improvement has resulted in health conditions of immigrants at domestic ports.

A great advance has been made, according to the report, in the hospital standards of the Public Health Service, so that now the service compares favorably with that of the civilian hospitals, while there has been a reduction in the cost. The marine hospitals are now provided with a trained female nursing service, physiotherapy aides, dietitians, and consultants in the various specialties of medicine and surgery.

The studies and demonstrations in rural sanitation have shown that the fundamental need throughout the rural districts of the United States is the establishment of efficient local whole time health service through which the measures necessary for the protection and promotion of the public health may be conducted in logical sequence and in proper relation to each other. Promotion of general health and prosperity will be best served by aiding in establishing, developing, strengthening and maintaining State and local health departments.

Research has been made along many lines, among which may be mentioned the Paris green method for control of mosquito breeding, and the creosote method for repelling mosquitoes in dwellings which cannot be screened, both of which have been developed and proved of value in antimalarial work; a real contribution to the treatment of neurosyphilis and the prevention of mental disease due to it has been effected by designating the forms of arsenic most valuable in treatment.

Among recommendations made in the report are that the studies and demonstrations in rural districts be superseded by a plan of work to be conducted with the States on a cooperative basis, thus advancing immeasurably the cause of public health and eliminating much needless overhead; adequate funds are solicited for carrying on the national quarantine work; for additional hospital facilities, including repairs to old buildings, new hospitals, and housing for increased medical personnel; for the control of venereal diseases; and for adequate pay of the lower grades of commissioned officers. Legislation providing for larger editions of publications used in public health education, and for shortening the term of service of assistant surgeons is also recommended.

HEMORRHAGIC DIATHESIS

Pathogenese und Therapie der hämorrhagischen Diathesen mit besonderer Berücksichtigung der praktisch wichtigen Fragen. Von. Dr. med. Werner Schultz. Halle a. S.: Carl Marhold Verlagsbuchhandlung, 1923.

This monograph constitutes the Band viii, Heft 6 of the series of *Verdauungs- und Stoffwechsel-Krankheiten,* edited by H. Strauss. In this study of the pathogenesis of the hemorrhagic diathesis the following features are discussed: a short review of the classification and the general pathogenesis of the hemorrhagic diatheses, the technic of the clinical examination, coagulability, hemostasis and intensity of the bleeding, the views on coagulation held by various authors, the physiology of hemostasis, the significance of the bloodvessels and the part played by such organs as the bone marrow, liver, spleen, suprarenal glands, kidneys, ovaries and the thyroid. The section on therapy includes the different factors of coagulation, such as thrombin, skeptophylactic serum and the activators of thrombin formation; also extirpation and the röntgen irradiation of the spleen. Skeptophylaxy is a term used to designate a condition of immunity to the intravenous injection of organic extracts, ascribed to an antibody directed against thrombokinase. An extensive bibliography is appended.

ELECTROTHERAPY

Lectures on Electrophysiotherapy. With Twenty Illustrations. Chicago: H. G. Fischer & Co., Inc. Pp. 350.

This book is a collection of papers by medical men, mostly in the Middle West, who are interested in physiotherapy. The discussions of these papers as well as questions asked and answered, are included. The papers were presented at a meeting held in Chicago, October 15 to 19, 1923, under the auspices of H. G. Fischer & Co., Inc., who are large manufacturers of high frequency machines. This company endeavored to bring together the men best trained in physiotherapy to interest other doctors in and around Chicago in the subject.

The papers were for the most part on the different applications of high frequency electricity but there were a few on modern x ray therapy and phototherapy, and actinotherapy. Two papers were presented by Dr. Fred H. Morse, of Boston; on the constant and electric currents. Especially worth while in this collection are the papers on physiotherapy applied to industrial work by H. I. Smith, of Chicago, and R. W. Fouts, of Omaha, Nebraska.

On the whole the book contains much on the use of medical and surgical diathermy, which would be of great value to any medical men interested to the least degree in physiotherapy, in general, and more especially in high frequency electricity. Diathermy certainly has won a place in modern therapeutics and no book so far has so completely covered this field.

PROCTOLOGY

Transactions of the American Protologic Society. Twenty-fourth Annual Session, June 22 and 23, 1923, Los Angeles, California. New York: Paul B. Hoeber, Inc., 1924. Pp. 89.

Mathews, the founder of the Proctologic Society, prefers the term "rectal specialist" to "proctologist." He says that the members of this association do important work and are benefactors to the human race. F. C. Yeomans describes a new operation, "circular amputation for marked first and second degree prolapse of the rectum." The operation itself is relatively simple, there is very little hemorrhage, and when performed under gas oxygen or preferably sacral anesthesia, there is practically no operative shock. This is a factor of prime importance when operating upon debilitated individuals. J. F. Montague publishes his important research work regarding the bacteriology of pruritus of the perineum. J. F. Saphir has an important paper on anorectal operations under local anesthesia. He concludes his paper as follows: 1. Up to date, one half of one per cent. novocaine with three minims to the ounce of adrenalin is the safest and most satisfactory solution for the production of local anesthesia in anorectal operations. 2. The circumscribed injection of the anal tissues blocks the sensation areas most satisfactorily for complete anesthesia and produces thorough relaxation of the sphincter muscles. 3. Stretching of the sphincter or dilating the anus becomes unnecessary. 4. This method of anesthesia can be successfully employed in about ninety to ninety-five per cent. of all anorectal ailments requiring operation. A few more important papers complete these interesting transactions.

COLLOIDAL CHEMISTRY

Manipulations de chimie colloïdale. Par Wo. Ostwald, professeur à l'Université de Leipzig. En collaboration avec Mm. P. Wolski et A. Kuhn. Traduit sur la quatrième édition Allemande avec l'autorisation de l'auteur. Par Edmond Vellinger. Paris: Gauthier-Villars et Cie, 1924.

The student of colloidal chemistry who finds German difficult and French easy will welcome this translation of the well known work of Ostwald on laboratory experiments in colloidal chemistry. The book contains nothing of direct interest to the practitioner of medicine.

DIABETES

A Diabetic Manual. For the Mutual Use of the Doctor and Patient. By Elliott P. Joslin, M.D., Clinical Professor of Medicine, Harvard Medical School. Illustrated. Third Edition, Thoroughly Revised. Philadelphia and New York: Lea & Febiger, 1924. Pp. vii-211.

The third edition of this little book on diabetes is intended to enlighten the patient in regard to the various phases of his disease with the idea of lengthening his life and making it more comfortable. The physician will find it of great assistance in his practice. After discussing the nature of diabetes and the recent improvement in its management, the important points in the treatment are brought out by means of a catechism. The caloric values of food and their estimation are presented in such a simple manner as to be very intelligible. Another distinctive feature is that the patient is instructed as to what information the physician desires and needs to make the patient's visits most profitable. The hygiene of the diabetic is emphasized. The chapter on the use of insulin is very instructive to both the physician and patient. The weight of the patient is given due consideration. The chapter on diabetic suggestions, recipes and menus is well worth the price of the book and more. An exhaustive table of the composition of normal foods and of the so-called diabetic foods is included. The chapter on selected laboratory tests for the examination of urine is very concise, clear and helpful. This is one of the best manuals on the subject.

MEDICAL MUSEUMS

International Association of Medical Museums, and Journal of Technical Methods. Bulletin No. 4. Managing Editors: Maude E. Abbott, M.D., and Major James F. Coupal. New York: Paul B. Hoeber, Inc., 1924.

This bulletin deals with an interesting diversity of subjects, although they all refer to some aspect of laboratory procedures. The reader turns from articles on museum technic and complicated classifications based on anatomy and pathology in use at the Army Medical Museum, Washington, to those on photography in some of its specialized phases, as the color reproduction of pathological specimens, and photographing specimens submerged in alcohol, water, or ether. There are contributions to microscopic and bacteriological technic, the purpose of the volume being to gather together those methods which are constantly appearing and which are of proved value in the laboratory, and to make the *Bulletin* a consulting reference library on laboratory technic. With this end in view abstracts of methods appearing in the current literature are included, which give in fuller detail than is usually possible in abstracts the procedures outlined.

THE BEST AND WORST OF LAWRENCE

Sons and Lovers. By D. H. Lawrence. New York: Thomas Seltzer, 1923. *Kangaroo.* By D. H. Lawrence. New York: Thomas Seltzer, 1924. *Birds, Beasts and Flowers.* By D. H. Lawrence: Thomas Seltzer, 1924.

The reprinting of *Sons and Lovers* comes opportunely as we struggle through the pages of *Kangaroo.* In the former there is much that explains him and everything he has written since, for the same peculiar pattern is there laid down for the first time. Physicians are sufficiently familiar with the disastrous effects of the mother fixation on a man's love life. Lawrence has shown in marvelous detail the web is woven more and more firmly throughout a life time of struggling, insistent mother love. Naturally Paul, his hero, cannot find a love object. Naturally, he wavers from one woman to another, with periods between when only men attract him. When his mother's death releases him, he is lost. He does not want release. He still clings to her in fantasy, a much more dangerous bond than that of reality. All his later books repeat this "lost soul" experience.

Kangaroo has little to recommend it. Lawrence apparently felt he ought to 'write up' Australia and he does so. The novel has a certain homosexual suggestiveness about it that is scarcely veiled. One always looks for the pathological in Lawrence's books now, and one finds it. Even his poetry, spontaneous and true as it is, centres relentlessly about sex, the sex act, natural functions.

It is much more diluted in *Sons and Lovers.* Perhaps we like it better in small doses. Perhaps we are not yet sufficiently free of the Victorian era to appreciate the crude ramming down our throats of "the facts of life."

AN AUTOBIOGRAPHY

Escapade. In Autobiography. By Evelyn Scott. New York: Thomas Seltzer, 1924.

There is nothing in the analysis of sensations that has escaped Mrs. Scott. She packs more sense images into the printed page than any other writer of the moment. All of which makes fascinating reading, spinning out as it does from one disaster to another, down to the lowest depths of misery. And then—salvation! $100 a month.

We believe that this book shows to a rather extraordinary degree the common tendency of bowing before circumstances, or choosing unconsciously the part that will inevitably result in disaster. The romance of suffering is an adolescent dream. Those who continue to suffer after reaching maturer years, suffer only from a prolongation of their mental adolescence. Some people find suffering very enjoyable. Such people will read this book with fervid admiration.

There is a great deal in it for the physician. It may convey to him, aside from the pathologically masochistic material, the fact that many women interpret life exclusively in terms of their own sensations. He needs some such key to understand what they are driving at in their illnesses.

Aside from the feverish atmosphere of the heroine's selfabasement (is she oldfashionedly doing penance for her breach of the public morals?), the book is vivid, beautiful, a work of art. We feel that Mrs. Scott's creative supremacy has been projected outwards in *The Narrow House* and *Narcissus.* In *Escapade* it has been turned inward with such vehemence that destruction yawns very close.

Medicoliterary Notes.

The American Medical Association has inaugurated a "package library," which means that, for a nominal charge, literature on special medical subjects, material in foreign languages, and reprints of articles by authorities on timely medical topics will be furnished from headquarters.

* * *

Because the State of North Carolina has been able to show such extraordinarily successful results from its public welfare work, the U. S. Children's Bureau has sent a special investigator there to study and appraise the system employed with a view to incorporating the results of the investigation in a pamphlet on county organization to be circularized later.

* * *

A German engineer, G. Strassburger, writing in *Die Umschau* of Frankfurt, describes a method by which it is possible to recover potential wealth from sewage, reminding us of Boffin of London, who made a huge fortune out of that city's garbage heaps. This is through the utilization of the large quantity of gases liberated from sewage including not only methane or natural gas, but heating and illuminating gases. The sewage purification plant at Erfurt has been succesfully and economically operated along these lines.

* * *

A report will soon be forthcoming on the municipal survey recently completed of Augusta, Ga. Three hundred citizens under the direction of fifty experts have been compiling inventories of every phase of community life, including child and family welfare, education, housing, recreation, industry, and agricultural conditions in the surrounding country. The results will be scientifically analyzed with a view to making use of them as a basis of future community enterprise.

* * *

One of the interesting centenary volumes of the year is Harold Nicholson's *Byron: The Last Journey, April 1823–April 1824.* (Houghton). The book is a detailed account of the poet's last journey, including a discussion of his relation to and connection with the Greek revolution.

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The Connecticut State Department of Health has recently prepared and circulated a small pamphlet entitled *The Smallpox Peril: Facts and Statistics.* The primary purpose of the publication is the promotion of vaccination among the general public.

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The National Amateur Athletic Association has recently announced the establishment of a Women's Division. The special purpose of this division is, not to promote unreservedly competitive athletics for women, but to prevent exploitation of young athletes, to emphasize the development of sportsmanship, and to minimize the undue emphasis at present laid upon individual accomplishment and the winning of championships. The central office of the division is at 1 East 104th Street, New York City.

* * *

Among those who made the recent attempt to reach the summit of Mt. Everest, 29,000 feet high, was Dr. T. Howard Somervell, great mountaineer, surgeon, painter, and musician. He it was who was able to record the music of the skull drums and the thigh bone trumpets played during the devil dances to which the expedition was treated at one of the Himalayan monasteries, and afterwards to transcribe and orchestrate it so that it could be reproduced in a London theatre. It is reported in England that, upon his return from Tibet, Dr. Somervell will do medical mission work in India.

* * *

At the International Congress of Refrigeration held in London last summer, forty countries were represented

Among important studies made and reported on were those on the relation of refrigeration to the dairy industry, to certain processes in rubber manufacture, and to mine ventilation. The necessity for standardization of equipment, the significance to health of cold storage requirements and standards, both stationary and in transit, the lack of standardized structural specifications, and the very slight interest and knowledge of the subject on the part of most schools and even shippers, led to the recommendation of setting up a permanent advisory committee between the refrigerating industry and university.

* * *

It is necessary for anyone who establishes a republic to presuppose that all men are bad, and that they will always apply the malignity of their mind when they have an opportunity. Men never work for good except under compulsion. *Mussolini's interpretation of the doctrine of Machievelli.*

* * *

Karl Schonherr, an Austrian dramatist, is the writer of a cycle of peasant plays now being produced by a group of Tyrolean peasant players in one of the large theatres of Vienna. This is a step toward the establishment of a permanent peasant theatre in that city.

* * *

The department of chemistry of the U. S. War Department has recently been making some interesting experiments on snake infested regions with deadly gases. In one instance chlorine and phosgene were forced into a cave known to be a den of rattlers. Although enough gas was used, in the words of one of the officers, "to kill a regiment," the snakes merely crawled about a bit uneasily, not taking the trouble even to come out of their lair. Two of the largest were caught and exposed to both gases for an hour, but were very much alive the next morning. Later they were given a heavy dose of tear gas, with no apparent effects.

* * *

"Most people who lyrically express their entire willingness to lay them down and die for Annie Laurie imagine that lady to be a mere fiction of the poet's fancy," says the *Living Age*. But this is a great mistake, we are told, for Annie Laurie is listed in a no less important work than *Burke's Peerage* as the youngest daughter of Sir Robert Laurie of Maxwelton, where there is still a portrait of her. The first version of the famous song was written by one of her suitors, William Douglas, a soldier of fortune and renowned duelist; but, true to the type of such ardent lovemaking, something happened to part the lovers, and William married another girl, while Annie Laurie herself was married two years later to another man.

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A series of experiments as to the fears of children has recently been conducted at Teachers College, Columbia University, as a phase of the Institute of Educational Research. The tests were under the direction of Dr. John B. Watson.

* * *

Records of the Weather Bureau are frequently required to settle court cases. A motorcyclist collided with a work team and farm wagon in broad daylight on an unpaved roadway. He narrowly escaped death, and lingered for some months in a hospital because of an aberration resulting from the accident. But he subsequently knew enough to enter the courts armed with weather records to prove that heavy rains before the collision had muddied the road, which became deeply rutted, preventing his turning aside for the team. Because he was in the right hand path, it was decided that he had a legal right to expect the teamster to yield damages. The teamster's memory was that the road was smooth.—*New York Times.*

* * *

A French filming association has produced recently a remarkable film called *Le Miracle des Loups* in which wild wolves and human beings took part together. The leading man was badly wounded and escaped death only by killing one of the wolves with his hands.

* * *

Wealthy Hebrews in China, with influential support from his country, have inaugurated a movement to investigate and reunite with their race Jewish colonies in China that have been separated from their kind for more than a thousand years. The revival of interest is due chiefly to Adolph S. Oko, librarian of the Hebrew Union College of Cincinnati, who recently brought from Europe a collection of manuscripts that show conclusively the relation of the Chinese Hebrews to those of the western world.

* * *

A document of significance in view of the present widespread interest in the subject of capital punishment is the small book by Warden Lewis E. Lawes of Sing Sing Prison entitled *Man's Judgment of Death; an Analysis of the Operation and Effect of Capital Punishment Based on Facts, not on Sentiment.* Putnam is the publisher.

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An article in a late issue of the *Living Age* reports that among recent German translations of books written in English the most popular are the autobiography of Henry Ford, Lloyd George's book, *Is It Peace?, Main Street* by Sinclair Lewis, Frank Harris's *Life of Oscar Wilde,* and books by John Dos Passos, Theodore Dreiser, and Geoffrey Moss.

* * *

The French Government has given a sum of nearly four million francs to assist in the reconstruction of the village of Plessy-Robinson, near Paris, as a garden village for writers, painters, sculptors, and musicians. A condition of residence is that each family must have at least three children, and an income under twenty thousand francs a year. The village is to be named after Sarah Bernhardt and is to be a memorial to the admiration of the French people for their greatest actress.

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J. B. S. Haldane, author of *Daedalus; or Science of the Future,* a late publication of Dutton, is a nephew of Viscount Haldane, and son of the late John Scott Haldane, physiologist and author of a number of scientific works. During the war Haldane fought with the Black Watch in France and Mesopotamia. He was one of the first upon whom was tried the effect of the gas mask. Later he became captain of a bombing school in Scotland where it is said he encouraged smoking in a bomb factory to teach the men steadiness of nerves. He is now reader in biochemistry at Cambridge.

* * *

The Harleian Miscellany, edited by Henry Savage and published in London by Cecil Palmer, is an interesting selection from the tracts and pamphlets in the library of Edward Harley, second Earl of Oxford, and was first published in 1744. It is a collection of curious lore, scandals, history and gossip of the times, and a commentary on the rather sadistic tastes and pursuits of many of our forebears.

* * *

One of Putnam's recent publications is *Psychographology,* by Eugene S. Bagger, a study of Raphael Scherman, the man who professes to read "visions" in handwriting.

* * *

The Department of Commerce has recently received from the Consul General at Copenhagen a report on the new law passed by the Parliament of Iceland. This law is to be effective for two years, and prohibits from import ready-made clothes, shoes, all kinds of bread, butter, cheese, salt pork, sausages, eggs, fruits, leather goods, oils, soap, furniture, pictures, films, watches and clocks, motorcycles and automobiles, and all jewelry and novelties. The law was passed in an effort to raise the value of the Icelandic crown. It will mean among other things that, when the present stock of shoes is exhausted, the people will have to resort to the native sealskin shoes, and that the homespun industry will be revived.

* * *

Commenting on the recent plague of caterpillars in England, the *Manchester Guardian* says: "No one nowadays seems to think of fighting the caterpillars which are ravaging Kent and Surrey orchards by means of the law, secular or ecclesiastical, as was the recognized procedure centuries ago. In 1120 the Bishop of Laon pronounced a solemn sentence of excommunication against caterpillars and grasshoppers in his diocese; and as late as 1516 an admonition was issued by another bishop declaring: 'We grant the request of the inhabitants of Villenoce, and warn the caterpillars to retire within six days, in default of which we declare them accursed and excommunicated.' With a commendable sense of justice, an advocate was sometimes appointed to plead the cause of the insects against that of the farmers before judgment was delivered."

Abstracts from Current Literature

NEUROPSYCHIATRY

Significance of the Rapidity of Sedimentation of Erythrocytes in Psychiatry.—A Glaus (*Schweizerische medizinische Wochenschrift,* March 13, 1924) arrives at the following conclusions regarding the sedimentation reaction in the most important groups of psychoses: Senile dementia shows acceleration, especially so in Alzheimer's disease. Syphilis of the brain and general paresis show acceleration, being especially marked in advanced cases with marasmus. Manic depressive insanity shows little or no marked acceleration (the cases examined were mostly melancholias). Psychopathy, neurasthenia and hysteria show little or no acceleration. In schizophrenia the reports are contradictory—slight or no acceleration. In the consideration of the subgroups, catatonia, especially in the acute stages, could be differentiated fairly sharply from the other groups by a relatively marked acceleration. There is a more or less characteristic "formula of rapidity" in the mixing test for catatonia. To what extent hebephrenia, etc., can be differentiated from the other subgroups by the mixing test is still a moot question. As a rule an accelerated sedimentation is not observed in paranoia. In epilepsy there is no or only a moderate acceleration and perhaps immediately after an attack there is more marked acceleration. This test requires further study and the subject is by no means as yet exhausted.

Malaria Therapy in General Paralysis of the Insane.—In a series of forty cases of general paralysis treated by inoculation with malaria, sixteen of which received in addition a course of salvarsan, A. R. Grant and J. D. Silverston (*Lancet,* March 15, 1924) made observations and comparisons on the findings in the cerebrospinal fluid and blood. In every case there was some alteration either in the fluid or serum or in both following treatment. The earliest signs of improvement were manifested by a diminished lymphocytosis and lowered globulin content of the cerebrospinal fluid and by a reduction in the intensity of the blood Wassermann reaction. A combination of all three changes occurred in forty per cent. of the series. The Wassermann reaction of the colloidal gamboge reaction and the colloidal gold test were favorably influenced at a somewhat later period. Combined improvement in the cell count, protein content, and Wassermann reaction of the cerebrospinal fluid took place in 18.7 per cent., and with the gold-sol test in 6.2 per cent. of the whole series. The Wassermann reactions of the cerebrospinal fluid and the blood serum were negative in twenty-five and 18.7 per cent. respectively—concurrently in both in five per cent.

The Question of Individual Psychology in Relation to Psychiatry.—Henrik Sjöbring (*Inaugural thesis for promotion to the degree of Med. Dr.,* Upsala, May 26, 1913) states that the general principles of psychiatry in analyzing mental processes fail to take cognizance of individual psychology. An abstract consideration of the group of symptoms presented by the subject rather than the subject *in concreto* places it in this or that category and defines the psychosis. Thus hallucinations and delusions point to a definite genesis and from the varied stigmata one arrives at the type.

When the aggregate of components, normal and abnormal, that constitute the psychic entity, fail in their harmonious functioning and the disorder is made manifest by purposeless activity, by failure to react to its varied contacts, by insufficiency in relation to its requirements, by lack of adaptation to its environment, by inability to fit into its *milieu,* the quest becomes a farreaching one to ascertain and determine teleologically the origin of the morbid phenomena. Whether it be the elements of inherency and predisposition and the complex thereby constituted, or whether extraneous influences contribute to the unbalancing of the mental mechanism.

The grouping of mental abnormalities under two heads, the *degenerative* or functional and the *organic,* defines these according to their salient or causal factors, the former where primal inherency plays the chief rôle and the latter in which external agencies, such as physical trauma, nutritional faults of toxic irritants causing somatic changes, are the contributing etiological factors in the development of mental unbalance, whether it remain a latent tendency or takes shape as a psychosis, varying in degree from a slight loss of correlation to a complete disintegration of the component elements that make up the psychic unity.

The author's plea is for the recognition of individual psychology as a special domain of psychiatry, for a careful tracing of this and that syndrome to its origin, for a closer determination of the particular inherency that constitutes the personality as abnormal, for on this and on the expression of its psychic activities we base our knowledge and determine the concrete personality, which is the object of individual psychology.

Treatment of General Paralysis.—James Purves-Stewart (*British Medical Journal,* March 22, 1924) speaks in favor of an improved plan of supplementing malarial inoculation in the treatment of general paralysis by introducing salvarsanized serum directly into the cisterna magna and roof of the fourth ventricle by means of a suboccipital or cistern puncture, according to the technic of Wegeforth, Ayer, and Essick. Serum introduced into this situation flows forward with the current of the cerebrospinal fluid to the basal cistern and thence upward to the cortical subarachnoid space, directly reaching the diseased cortical areas. Weekly intravenous injections of salvarsan, with fortnightly intracisternal injections of salvarsanized serum, are carried out systematically. Daily mercurial treatment by mouth is also given throughout. The cerebrospinal fluid and blood are examined at every injection, and the treatment is continued not only until the clinical symptoms, physical and mental, have cleared up, but until the cerebrospinal fluid becomes normal, as evidenced by the disappearance of the pleocytosis and by a negative Wassermann reaction.

Lumbago.—F. Zollinger (*Schweizerische medizinische Wochenschrift,* April 10, 1924), studied about five hundred cases of lumbago from the viewpoint of accident insurance. In private practice among noninsured patients this condition is so diagnosed and correctly treated with salicylates. In accident insurance practice it is usually considered as a sprain of the muscles or spinal joints and also treated with salicylates. In the former group a feeling of stiffness often precedes the acute pain. Affections of the nose, throat, or teeth are usually present. The pains are often associated with alcoholism. The dorsal muscles and tendons are not easily torn and the pain does not usually last long. Contracture of the muscle, functional scoliosis and Lasègue's sign of sciatica are commonly present in lumbago. The author considers this condition as an infectious neuritis, which may be aggravated by an accident. Only patients who can prove some sudden incoordinated muscular action at the moment of the onset of pain should be considered as fit subjects for accident indemnity.

The Blood Sugar and Sugar in the Cerebrospinal Fluid in the Insane.—M. Dide, G. Fages and A. Bauduin (*Presse médicale,* May 14, 1924), present the results of a research on this question in fifty-six cases. They find a striking contrast between the diseases of the brain (congenital or acquired brain lesions, senile dementia, presenile delusions) and the constitutional affections (cyclic insanity, progressive delusional insanity and systematized delusional insanity). In the case of acquired cortical lesions, the blood and spinal sugar are normal or depart but slightly from it. Sometimes there is even an increase of blood sugar in the presenile cases. In cyclic insanity, the blood and spinal sugar are normal in the quiet periods; in the course of recovery there appears to be a parallel rise in the blood and spinal sugar, whereas in the premonitory period preceding the attack there had been a reduction of the blood sugar with a marked rise of the spinal sugar. During the attack, the spinal sugar seems slightly increased. Dementia precox is rather frequently characterized by a reduction of the blood sugar, although at times the same patients may show hyperglycemia, without any apparent cause other than a modification in the mental state. The spinal sugar is seldom normal, never lowered, and generally increased, without any obvious relationship to the variations in the blood sugar. In spite of the great muscular activity attending

the epileptic seizures the blood sugar is never increased, but frequently lowered, whereas the spinal sugar is always increased, sometimes to an enormous extent. These findings appear to support the sympathetic pathogenesis of the constitutional psychoses. One of the authors (Dide) has described dementia precox elsewhere as a complete sympathetic syndrome and the other psychoses as partial sympathetic syndromes. Only a disturbance of vegetative innervation could give rise to marked, cyclic variations in a fundamental metabolic process such as that appertaining to glucose, which Derrien and Piéron have shown to occur in emotional seizures. Epilepsy seems like the constitutional psychoses in being dependent on a sympathetic disturbance, especially appreciable in the endocrine glands, but is more especially related to vasomotor conditions in the nerve centres. Apart from these hypothetical considerations, it seems undeniable that the constitutional psychoses are attended with changes in the spinal sugar—usually a nincrease; that the critical periods are marked by an accentuation of this rise in spinal sugar; that the blood sugar is often low in dementia precox, and that epilepsy is attended with a persistent increase of spinal sugar together with a tendency to hypoglycemia.

A Contraindication to the Use of the Derivatives of Malonylurea.—A. Tardieu and A. Médioni (*Journal de médecine de Paris,* April 26, 1924), note that the clinical manifestations of poisoning are the same with all the derivatives of barbituric acid, including barbital (veronal), phenobarbital (luminal), and somnifen (combination of the diethylbarbiturate and diallylbarbiturate of diethylamine). These manifestations include coma and a rather characteristic dysarthria, with a special puckering of the labial commissures and a paretospastic difficulty in articulation suggesting rather closely that of general paralysis. There have also been repeatedly reported a central external ophthalmoplegia with diplopia and morbilliform or urticarial eruptions. The authors' case was that of a woman with extensive ascites and severe pains in the right hypochondrium, resulting in insomnia. Somnifen was given for six days in doses of thirty drops, but this was followed by delirium with restlessness, visual hallucinations, and incoherent logorrhea. After an interval of two days, the drug was renewed in the same dose for ten days. Unable to sleep, the patient then swallowed all that remained in the bottle, viz., six mils, corresponding to 0.6 gram each of diallylbarbituric acid and diethylbarbituric acid (veronal) and 0.3 gram of diethylamine. A few minutes later, she passed into a state of deep sopor, from which even the strongest stimulants failed to rouse her. Her limbs were completely inanimate, all reflexes abolished, and respiration quiet but shallow and accelerated (26 a minute). The pulse was thready and almost imperceptible, at a rate of 140 a minute. The extremities were cold and cyanotic and the temperature rose to 39° C. Death took place from heart failure twenty-four hours later. The conclusion reached from this case is that the drugs of the malonylurea series should not be prescribed in cases with organic or functional disease of the liver, including tuberculous, syphilitic, alcoholic or malarial cirrhosis. If delirium of the confusional type develops during their use, it will be well to discontinue their administration.

Quinine Urea Injection for Sciatica.—A. E. Hertzler (*American Journal of Surgery,* April, 1924), finds an injection of quinine and urea hydrochloride vastly more effective than tropacocaine, stovaine, etc. A solution of one per cent. quinine and urea hydrochloride is used. From fifteen to thirty c.c. are injected into and about the nerve at the point where it lies over the neck of the femur. This point is selected because when the neck of the femur is reached by the point of the needle the operator knows the needle has been passed deeply enough and that if the nerve has not been located the direction of the needle must be changed.

The technic is as follows: The patient is placed on the unaffected side with the affected thigh half flexed. A point is selected on the line between the tuberosity of the ischium and the great trochanter, somewhat lateral from the midpoint, the exact distance depending on the size of the patient. When the patient stands erect the nerve passes over the edge of the acetabulum, which is a point midway between the bony landmarks just mentioned, but when the leg is semiflexed, the nerve glides to the side along the neck of the femur. It is at this point that the needle must strike it.

A wheal is first made in the skin with a fine needle. A larger needle, long enough to reach the depth required (preferably one of eighteen gauge, and four or five inches long) is passed slightly upward as it goes into the depth. If it strikes the nerve the patient will feel a pain shooting down the leg along the line of his former pains. The operator will perceive a sensation as if the needle had passed from muscle into rubber tubing—a peculiar elastic resistance. If the nerve is not struck the needle will strike the neck of the femur. The operator must then partly withdraw the needle and start in a new direction. Usually he will find that his needle has been passed too far medially. Patient search must be made until the nerve is located—by no means always a simple matter particularly in stout patients. The solution to the amount indicated is deposited in this region. In thin subjects I use the lesser amount and in stout patients and for repeated injections the larger amount is used. I usually try to inject five cc. of the solution directly into the substance of the nerve and the remainder in its immediate vicinity. Recent or mild cases are usually cured by one injection. Severer cases should be reinjected after a week. Severe, longstanding cases, particularly those complicated by scoliosis, may require as many as four or five injections. The intervals between the treatments should be a week or two.

If the injection is made into the nerve a cure is certain. Usually the first injection produces a marked improvement. In rare instances the condition seems to be aggravated but this passes off within a few days. There have been no complications or unpleasant sequelæ, and so far as I know there have been no recurrences.

Encephalitis Lethargica.—H. E. Foster and J. R. Cockrell (*American Journal of the Medical Sciences,* May, 1924) assert that the main points to be considered from a study of the quantitative sugar determinations made on the fluids from thirty-five cases of encephalitis lethargica are:

The determination of the sugar content of the cerebrospinal fluid should be made by a reliable quantitative method; an amount of sugar above 0.0600 per cent. was obtained in ninety-one per cent. of the fluids studied, using the Folin-Wu method; quantitative sugar estimations are valuable in differentiating encephalitis lethargica from tuberculous meningitis and as an aid in other conditions presenting similar symptoms; the amount of sugar present in the cerebrospinal fluid is not pathognomonic of encephalitis lethargica but is of recognized utility in making the diagnosis.

Masked Malaria Following Malaria Treatment in General Paralysis and the Possible Relationship Between Epilepsy and Malaria.—Emil Redlich (*Wiener klinische Wochenschrift,* February 7, 1924) has observed that during the febrile attacks of malaria, especially in predisposed individuals, as children, epileptic and epileptiform attacks may appear. This is a usual occurrence in all febrile infectious diseases, which may be explained by toxic, possibly vasomotor, or other factors resulting from infection. The author has also observed epileptic attacks as a substitute for masked malaria, occurring independently in isolated cases. In this respect these resemble other nervous and psychic phenomena of masked intermittent fever, as mentioned above. Their explanation is not easy and the factors of infection must be drawn upon in explanation. A predisposition of a general or special nature, cannot be assumed to exist, at least not in the majority of cases. In isolated cases the epileptic attacks have been observed to occur subsequently, constituting chronic epilepsy. These cases lead to the question whether a previous malaria has existed even without a masked intermittent fever giving rise to chronic epilepsy. The pathogenetic significance of these cases must be sought in the cerebral changes induced by the malaria, and consequently cerebral hemiplegia and pigmentary emboli and also clogging of the capillaries by parasites and capillary and precapillary hemorrhages must be thought of. In addition, more recent investigations, especially in tropical malaria and pernicious anemia, have revealed a series of other microscopical changes, such as infiltrations of the meninges and vascular sheaths with hematogenic cells, proliferation of the vascular endothelium proliferation of the glia with neuronophagia, and peculiar proliferations of the glia cells, which have been designated as malarial granulomas. It is evident that such cerebral changes, just as well

as other lesions, may produce a predisposition for the occurrence of epileptic attacks, whereupon other injuries, such as great heat, may produce the attacks, resulting finally in chronic epilepsy. In these cases antimalarial therapy has little effect as regards the epilepsy.

Mental States in Alcoholism.—Bedford Pierce (*Lancet*, April 26, 1924), states that the alcoholic psychoses present few specific features. The author studied the effect of a single dose of alcohol on inhibition and on instinct and he found that the primary influence of alcohol is on the vegetative nervous system. It produces a dilatation of the peripheral vessels and it also acts, possibly, on the nervous mechanisms involved in the expression of the emotions, including the endocrine organs. However, it is difficult to draw definite conclusions. Alcohol affects markedly the three primitive instincts—the herd, the sexual and the ego.

MALIGNANT GROWTHS

Cancer and Pregnancy with Special Reference to Cancer of the Breast.—W. Odermatt (*Schweizerische medizinische Wochenschrift*, April 24, 1924) found that transfusion with the blood of young persons inhibited the development of cancer of the stomach in two out of sixteen cases. The precancerous stage of carcinoma of the breast (glandular infiltration, retraction of the nipple) shows a tendency toward a more rapid malignant growth during pregnancy and lactation and clinically definite carcinomas grow more rapidly and metastasize on the advent of pregnancy. Pregnancy also usually favors the development of recurrences and metastases after the tumors have been subjected to radical operation postoperative irradiation. Except in inoperable cases, it is therefore proper to advise interruption of the pregnancy and avoidance of subsequent pregnancy.

Primary Sarcoma of Mediastinum and Lungs.—C. A. Peters (*Medical Clinics of North America*, May, 1924) draws the following conclusions: 1. Sarcoma of the mediastinum and lungs is a relatively common disease. 2. It is often difficult to say which is involved first unless the case is seen early. 3. The mediastinum is more often the original seat of the growth. 4. Sarcomas grow slowly but extensively, and select the line of least resistance, but some definitely invade such structures as the pericardium and heart. 5. They may metastasize in the lung, and if a vein is ruptured metastases may be found in any organ. 6. There may be extensive involvement for a long time with only a moderate loss of weight, and the other signs which one usually associates with malignant disease.

Carcinoma of Gallbladder.—J. B. Deaver (*American Journal of Surgery*, May, 1924) says that, if, as most authorities believe, gallstones are exciting factors in the development of cancer, it would seem that here one is fortunately dealing with a demonstrable precancerous disease which can be effectively eradicated by the removal of the benign disorder known as cholelithiasis. Cancerous transformation of a gastric ulcer is no longer doubted in many quarters. The evolutionary process of gallstones is an analagous one, since it is the presence of the stones that leads to possible necrosis and prolonged ulceration, with consequent epithelial proliferation and cancerous changes. Therefore, the possibility of cancer as a sequel of gallstones must form a part of the prognosis of calculous cholecystitis and must enter into consideration in deciding for or against operation.

Carcinoma of the Antrum.—F. M. Johnson (*Surgery, Gynecology, and Obstetrics*, June, 1924), presents the following conclusions:

1. Cancer of the antrum must be recognized in the early stage before any method of treatment will produce uniform and favorable results. The opportunity is given to rhinologists and dentists, but facts indicate the tardiness with which they make an accurate diagnosis.

2. Conservative surgery combined with radium promises to give better results than does the radical operation.

3. Palliation for a large number of hopelessly advanced cases is possible through the conservative use of radium.

4. The successful application of radium depends on an adequate exposure of the area. As a rule an oral approach is best, but if conditions demand it the eye should be removed and the floor of the orbit opened.

Carcinoma of the Rectum.—R. C. Coffey (*Surgery, Gynecology, and Obstetrics*, June, 1924), holds that the two stage operation obtains the best results. The principles to be adopted for the first stage are: 1. A completed physiological abdominal mechanism must be provided which is not to be disturbed afterward. 2. Complete devascularization of the involved and adjacent tissues from above. At the same time the devitalized structures must be mobilized and pushed down within easy reach of a sacral or perineal incision. 3. Separation of the retained physiological area from the discarded area by a quarantine pack which also serves the purpose of draining away the débris of any sloughing tissue resulting from devascularization.

He describes this first stage operation in detail for three different types of cancer. When the operation is completed it is halted until a complete anatomical and physiological abdominal mechanism has been reestablished. By this he means that the sutured peritoneum above the quarantine has firmly healed, the abdominal wound has healed, the artificial anus is firmly established and acting well, the patient's pulse and temperature are practically normal and the patient's digestive apparatus is functioning normally. This is usually completed about the tenth day after the operation. Occasionally, we do the operation a little earlier but sometimes the second operation is delayed several days longer until the patient is in a good healthy condition. In the meantime the enemy, the cancer, has been largely cut off from its support, is quarantined from the rest of the body to a large extent, and is almost harmless for the time being. The most startling and spectacular thing that takes place during this interval between operations, is the line of cleavage between the tissues which have been devitalized and are to be removed and the normal structures which are to remain. This change makes the second operation a minor affair.

The second stage operation is also described in detail, for both men and women. It consists mainly in cutting away the growth within the lines of cleavage, which, owing to the interval between operations have become definitely formed. This is the main argument in favor of the two stage operation, and concerning it the author says: The definiteness of the line of cleavage around the fascia propria of the rectum and the ease with which the second operation is performed is amazing to anyone doing the operation for the first time or even observing its performance. The causes of this line of cleavage or edematous area is probably due to the complete shutting off of the circulation from above which largely devascularizes the perirectal tissues inside the fascia propria at the first operation. This line of cleavage seems to be comparable to the line of demarcation in gangrene and occurs at the point at which the normal circulation outside the fascia propria encounters the devascularized area at the fascia propria. It does not occur in the absence of devascularization and as far as I know it does not occur in the absence of drainage or the quarantine which of necessity follows devascularization.

Primary Sarcoma of the Esophagus.—C. E. Smith and G. Y. Rusk (*Annals of Surgery*, November, 1923) report upon recorded cases and one of their own as follows:

Including our case, thirty-five cases of primary sarcoma of the esophagus have been reported. The average age of these patients is 53.6 years. The condition is much more common in men. Where sex is given there are twenty-six men and seven women.

Practically every patient showed dysphagia due to stenosis or obstruction by the tumor. Pain was present in many cases, its location varying according to the site of the tumor.

It seems probable that in all cases, except those of myosarcomata, the growth originated in the submucosa.

Sarcoma of the esophagus apparently grows more rapidly than carcinoma, but metastases do not seem to occur as frequently as one usually finds in sarcoma elsewhere in the body.

In many cases gastrostomy was necessary, due to stenosis or obstruction in the esophagus caused by the new growth. In only one instance, the second case of von Hacker, was resection of the esophagus performed. The growth recurred in adjacent tissue in the cervical region and the patient died three months later of bronchopneumonia.

It seems possible that operation might affect a cure if the patient is seen early, especially in a case of the more slowly growing, polypoid fibrosarcomata such as our own.

OBSTETRICS

Kielland Forceps.—Among his cases, Günther Conrad (*Zentralblatt für Gynäkologie,* March 22, 1924) never met with any unfortunate results and he believes that the Kielland forceps is a universal instrument applicable for every type of presentation of the head and at every level of the pelvic plane provided the proper indications are present, because this forceps grasps the head in every position in the most ideal way biparietally. It was applied with good results even in generally contracted pelves. The technic of application is easily acquired. The reduction in the danger to the mother and child is so striking that it cannot be denied and therefore the Kielland forceps may be entrusted to the general practitioner.

Value of the Kielland Forceps.—Theodor Wyder (*Zentralblatt für Gynäkologie,* March 22, 1924) asserts that the only forceps that can be entrusted to the hands of the general practitioner is one which does not make any great technical demands and does not lead him to difficult and dangerous applications of the same. The best forceps for that purpose are those with moderate pelvic curves, such as the model of Naegele and others. There is, therefore, no good reason why the Kielland forceps should replace the other types. In the vast majority of cases demanding the application of forceps the Kielland forceps does not have the slightest advantage over its predecessors.

The Place of the Kielland Forceps in Obstetrics.—Th. Wyder (*Schweizerische medizinische Wochenschrift,* March 13, 1924) believes that the use of the Kielland forceps should not be abandoned. It denotes progress insofar as it facilitates the rotation of the head, but it does not advance the indication for forceps. It should be used only by experienced obstetricians and should not therefore be entrusted as yet into the hands of the general practitioner.

Injuries to the Skull from Kielland Forceps.—Karl Fink (*Zentrablatt für Gynäkologie,* February 23, 1924) reports five cases in which the skull was injured by the Kielland forceps in spite of the presence of a normal pelvis, a normal size of the head and the most careful diagnosis and indications. These experiences show that too great a traction and powerful rotation with the Kielland forceps should be avoided if unforeseen conditions arise. Otherwise too great a pressure is exerted on the temporal bones and the skull bursts.

Hydrostatic Bag for the Induction of Labor.—George H. Lee (*American Journal of Obstetrics and Gynecology,* March, 1924) describes a bag which combines the good features of the Barnes fiddle bag and of the Champetier de Ribes and Voorhees bags. It has a constricted portion which rests in the cervical canal so that, when in place, it will distend the cervical canal and also a large portion that will rest in the lower uterine zone and act as an irritant to excite uterine contraction. The distal dilatation is globular in shape and so fashioned that it will rest in the vagina. A small tube of only one cm. in diameter communicates with the exterior, which tube is not sufficiently large to distend the vulva and keep it open. This bag is constructed of rubber fairly heavy, sufficiently so to permit a weight to be fastened to the tube that protrudes from the vulva, when necessary.

Pressure Changes in Craniovertebral Canal of Fetus.—B. Crothers (*Surgery, Gynecology, and Obstetrics,* December, 1923) presents the results of the imposition of force upon the fetus during delivery considered from a neurological and physiological point of view.

The most important lesions, directly referable to force, are: 1, rupture of the falx or the tentorium, and 2, rupture of the cervical spinal column. These lesions are not in themselves fatal, but they expose the medulla and the upper cord to injury.

Under ordinary conditions the medulla is guarded from harmful pressure by the tentorium, which modifies and controls force imposed upon the vertex, and by equilibrium of fluid pressure at the foramen magnum, which prevents downward dislocation of the contents of the posterior fossa. This balance of pressure can be upset and herniation of the cerebellum and medulla produced by rupture of the dural septa or by combinations of forces which maintain or increase intracranial pressure while diminishing spinal pressure.

Breech extraction, as usually performed, brings dangerous and unphysiological forces into play. Pathological evidence shows that rupture of the tentorium occurs in eighty-eight per cent. of the still births following socalled normal breech labors. In addition a considerable number of injuries of the vertebral column or of the spinal cord can be logically attributed to traction during breech deliveries.

Aside from the gross injuries, which account for about half of the death rate in viable newborn babies, various alterations in pressure during delivery and certain manouvres during resuscitation may produce fatal or disabling lesions within the central nervous system.

Asphyxia, as commonly described in obstetrical literature, is vaguely defined. Pathological and experimental evidence of its existence is not available. While the absence of proof is not in itself evidence against the obstetrical conception, it invites challenge. The pathological findings, particularly those in babies dying after breech delivery, raise the question whether efforts to avoid fetal asphyxia may not add to the already great risk of injury to the contents of the craniovertebral cavity.

Breech Presentations; Prophylactic External Version. G. H. Ryder (*Surgery Gynecology, and Obstetrics,* November, 1923) says that the safest method of treating breech presentations is by prophylactic external version.

External version not only reduces the fetal mortality, but renders labor shorter and more natural for the mother.

The operation is safe, if done without force.

The best time for performing external version is usually the seventh and eighth calendar months.

The operation is generally quite easy and may usually be performed without ether.

When at all difficult, a general anesthetic should be used. Under this, in most cases, except late in labor, external version is easily performed.

Force should never be used. If version can not be accomplished without force, the operation should be given up.

When external version is once performed, the fetus occasionally resumes its original presentation, but usually does not. This is more likely to occur when the version is very easy. Consequently, the fetus may be re-turned as frequently as necessary, even early in labor. When external version is difficult, spontaneous reversion is not apt to occur.

External version performed early gives warning of disproportion between the head and the pelvis, by observation of the way in which the head settles into the pelvis or may be crowded in by the obstetrician.

Finally with careful observation in the latter months of pregnancy, external version should reduce the fetal mortality of breech presentations approximately to that of cephalic presentations; and furnishes one more argument for careful antepartum examinations.

Transperitoneal Cervical Cæsarean Section.—L. E. Phaneuf (*Surgery, Gynecology, and Obstetrics,* December, 1923) discusses the Beck, Kroenig, and Hirst operations with tabulated results of each, and concludes as follows:

1. The transperitoneal Cesarean section offers protection against septic peritonitis.
2. There is practically no shock as the intestines are not handled.
3. There is less bleeding.
4. The mother has a much easier puerperium.
5. There is better healing since the incision is in the cervix, the noncontractile part of the uterus.
7. There is less danger of rupture in subsequent pregnancies and labor.
7. An efficient test of labor may be given with safety.
8. The Hirst operation is best in doubtful cases, and the Kroenig or Beck operations in clean cases.

Eclampsia and the Weather.—As a result of his studies, A. Hoënhorst (*Zentralblatt für Gynäkologie,* January 26, 1924) comes to the conclusion that there probably exists some relationship between climatic conditions and variations, on the one hand, and the frequency of eclampsia, on the other. Etiologically, the factor of weather (dampness) comes up for consideration only as an excitant, as it probably affects injuriously upon the detoxicating and excretory organs of the body and consequently results in a stasis of the toxins which produce the disease picture of the eclampsia.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

GREGORY STRAGNELL, M. D., *Editor*

Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, OCTOBER 15, 1924

Medicolegal Notes.

NEGLIGENCE IN TREATING FRACTURED FEMUR HELD FOR JURY

In an action for negligence in the treatment of a fracture of the femur of plaintiff's leg the Minnesota Supreme Court held, Anderson v. Satterlund, 197 N. W. 102, that it was for the jury to determine whether the overriding of the broken ends of the bone resulted from the defendant's failure to exercise proper care and skill. The evidence showed that in applying the cast the full length of the leg he was following an approved method of treating a fractured femur, that it was not bad practice to use the cast without attaching a weight to the leg, and that the ends of a broken femur cannot always be kept from overriding, no matter what method is employed to reduce the fracture. It was held that the proper treatment of the leg after the bone was set was also for the jury. There was an interval of four weeks between the date when the cast was applied and the date when defendant discovered the broken ends of the bone were no longer in position. When the ends slipped was left in doubt. It might have been a gradual process or it might have occurred suddenly. The medical witnesses agreed that a fracture should be watched closely. The event which happened was not so unusual that it could not have been anticipated. It was held that the jury might find that in the exercise of reasonable care the defendant should have done more than he did to ascertain from time to time whether the bone was uniting properly, and that, while the showing of a failure to exercise reasonable care and skill was not clear or convincing, the evidence furnished a basis for a rational inference that there was negligence in that respect. Judgment for plaintiff was affirmed.

PERSONS ELIGIBLE AS CHIROPRACTIC EXAMINER IN CALIFORNIA

The California Supreme Court holds, People v. La Barre, 224 Pac. 750, that the language of the State Initiative Act, giving the Governor power to appoint a board of chiropractic examiners, furnishes convincing proof that it and the Medical Practice Act are to be construed, in so far as consistent, in pari materia, section 18 providing that it shall not be considered as repealing the Medical Practice Act, except as that act may be in conflict with the Initiative Act as applied to persons licensed under the latter act, and section 13, providing that "chiropractic licentiates shall observe and be subject to all state and municipal regulations relating to all matters pertaining to the public health."

The Initiative Act provides that: "Each member of the board first appointed hereunder shall have practiced chiropractic in the State of California for a period of three years next preceding the date upon which this act takes effect, thereafter appointees shall be licentiates hereunder." This provision, it is held, contemplates the appointment of persons lawfully practicing under licenses issued under the Medical Practice Act, the word practice meaning engagement in the treatment or healing of the sick in accordance with the rules which the state in the exercise of the police power has prescribed.

NEGLIGENCE NOT SHOWN IN USE OF RADIUM FOR CANCER

In an action for damages alleging negligence in burning plaintiff with radium while treating her for cancer, the Iowa Supreme Court holds, Furgason v. Bellaire, 197 N. W. 13, that it is necessary in cases of this character to show that defendant failed to exercise the knowledge and care usually and ordinarily exercised by practitioners in the same or similar localities, and that the evidence, which was very meagre on the point, did not indicate that the defendant failed to observe the usual and ordinary practice of his profession in applying the radium or in the treatment of the plaintiff after such application. Judgment for the defendant was therefore affirmed.

LOSS OF EYE HELD NOT DUE TO PRIOR OPERATION

In a proceeding under the Washington Workmen's Compensation Act, the question was whether ulcers causing the loss of the claimant's eye were the result of an operation for neuralgia, evulsion of the root of the fifth nerve on the right side of the face, or of sawdust being blown into the eye while the claimant was at work. The testimony of experts showed that the operation would have the effect of interfering with the winking of the right eye and the natural bathing of the eyeball, which would become dry, in which case ulcers would form on it. Two of the four experts testified that the operation probably would cause such ulcers, necessitating removal of the eye. The other two testified that such an operation would seldom cause a loss of the eye. As there was positive testimony of sawdust being blown into the eye, followed by inflammation and an increasing dimness of the eye, and all the experts testified that foreign matter coming into the eye may cause ulcers thereon and necessitate its removal, the Washington Supreme Court held, Hamilton v. Department of Labor, 224 Pac. 387, that the claimant had proved his case.

CONSULTATION OF OR ATTENDANCE BY PHYSICIAN WITHIN MEANING OF INSURANCE APPLICATION

The Oklahoma Supreme Court holds, Sovereign Camp W. O. W., v. Brown, 221 Pac. 1017, that the mere calling into a doctor's office for some medicine to relieve a temporary indisposition cannot be considered an "attendance by a physician," nor a "consultation of a physician," within the meaning of an application for insurance stating that insured had not consulted nor been attended by a physician within five years of the date of application.

DEATH BY EFFERVESCENT MEDICINE HELD ACCIDENTAL

The Iowa Supreme Court holds, Gohlke v. Hawkeye Commercial Men's Association, 197 N. W. 1004, that death resulting from the closing of the glottis after taking a dose of sal hepatica may be said to be the result of external and accidental means entitling a beneficiary to recover under an accident policy. The court holds that the voluntary taking of a nonpoisonous, harmless remedy, even though taken in a manner to produce, by effervescence, a gas that would be irritating, but which was not expected or intended to produce injurious results, would, where such a result unexpectedly follows, be a violent external and accidental means.

COMPENSATION FOR RECURRENCE OF INJURY

A miner received a severe contusion of the right shoulder, evidenced mostly by lack of function of the right arm. was pronounced "surgically healed" and resumed work for two months, when he was again injured, when throwing a lever forward paralyzed the arm for the time. The only medical witnesses testified that this was a recurrence of the first injury, which might come from any movement of the arm. The Utah Supreme Court therefore holds, Continental Casualty Co. v. Industrial Commission, 221 Pac. 852, that payment of compensation could not be awarded against an insurance company not insuring at the time of the original injury. An accident by which a diseased condition of the body is accelerated is different from a recurrence of an injury, and where there are two accidents the question whether the disability is attributable to the first or second depends on the circumstances of each case.

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Dr. Javier Ortis y Ferrer, *Physician to the Municipal Charity of Madrid, Spain:* "VALENTINE'S MEAT-JUICE has given the happiest results in cases of debility and in the asthenia produced by operations of confinements. In some cases of Tuberculosis it restored exhausted strength, and in every case where organic exhaustion manifested itself as an effect of disease."

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S 130

Miscellany.

Psychological Research Planned at Yale University.—Announcement has been made by the authorities of Yale University of the establishment of a new institute for research in fundamental problems of psychology. This movement has come as a response to demands for basic data in psychology for use in industry, in medicine, in education, in social work, in child welfare, and in various public problems. The institute is to be an integral part of the university, and will be open to graduate students from all parts of the United States and from foreign countries. In addition to purely human psychology, the reactions of animals will be studied, for the light they can throw on certain phases of human behavior.

Three new members, all men of national reputation, have been added to the Yale faculty, to comprise the staff of the institute. Dr. Robert M. Yerkes has been called from the National Research Council at Washington, Dr. Raymond Dodge from Wesleyan University, and Dr. Clark Wissler from the American Museum of Natural History. Roswell Parker Angier, professor of psychology in Yale University, will act as chairman of the institute.

Ancon's Famous Orchid Garden.—The average visitor to the Isthmus of Panama, on pleasure bent, lands at Cristobal, sees the Gatun Locks, hurries over to Panama, lunches at the Tivoli, is taken in hand by an unimaginative jitney driver, whirled out to the ruins of Old Panama, sees the gold altar, is whisked through Fort Amador and to the train, hustled back to Colon, does a little shopping for things which he could buy better and cheaper at home, rushes aboard his ship and sails away believing he has seen it all. Yet he has not scratched the surface and there remain wonders which he has not even sensed. One of these is the orchid garden on the side of Ancon Hill. Here in a simple little tropical cottage lives Mr. C. W. Powell, one of the most famous orchid growers in the world. He has about seven thousand plants of which over four hundred are indigenous to Panama. For the last fifteen years he has been receiving specimens from Australia, the Philippines, India, China, Mexico, Costa Rica and the various countries of Central and South America. Any visitor is welcome to this garden and this unassuming modest gentleman will exhibit the Flor de Mayo from Colombia, a tree orchid having the general shape of a bell with wings on either side. The centre is white and yellow and the remainder of the flower is a gorgeous purple. He will show the Holy Ghost, a terrestrial orchid, and the famous butterfly orchid of Panama. It is his belief that the orchid represents the highest form of development in the vegetable kingdom, just as man is the highest in the animal kingdom, and he insists that the orchid is not a parasite since it does not live at the expense of its host but by its peculiar anatomy draws from the air, moisture and nitrogen. The seeds grow in pods as long as the middle finger, not unlike artichokes. These pods contain from one to five million seeds of microscopic size and so light that they may be blown about by the softest breeze. Each of these tiny seeds is provided with a rudder somewhat like that of the aeroplane. They will only germinate when they land on a particular fungus and then only after about a year. Growth then proceeds slowly and after a lapse of from seven to twelve years the plant may flower. The orchid is like a banana in that after a bulb sends out a bloom, it dies and another bulb is sent up from the parent root. About ninety-nine per cent. of all orchids are bisexual but cannot pollinate themselves. This is done for them by a small bee which transports the pollen from one flower to another. In Panama the orchids bloom best in March, April and May, but the beautiful Holy Ghost flowers in August. At present Mr. Powell is endeavoring to make this variety come into blossom at Easter tide. In an attempt to do this, he dries the bulbs during the rainy season and waters them copiously during the dry season.

Improved Sanitation at the Port of Callao, Peru.—The newspapers of Lima, of which Callao is the port, have undertaken a campaign for the stimulation of the sanitation of that port. At the present time, steamers and larger vessels do not go to dock but a considerable number of sailing vessels and similar craft load and unload there. Inasmuch as Callao is heavily plague infected and the dock walls form ideal breeding and harboring places for rats, the condition is a considerable menace to other countries. The daily papers are calling attention to the fact that this exercises an untoward effect upon Peruvian commerce as does also the bad general sanitation of Callao itself and are urging that the docks be thoroughly rat proofed and that the town be placed and maintained in perfect sanitary condition. From the viewpoint of the Panama Canal, it is most important that these things be done. The one great epidemic pestilence which threatens the Canal Zone is bubonic plague and could the west coast of South America, particularly the Peruvian littoral, which is the most heavily infected, be freed from this disease, it would be possible to lower some of the restrictions against the free movement of commerce which are now in force.

United States Supplies Trees to Fight Leprosy in Tropics.—The United States Department of Agriculture has supplied the governments of Colombia, Brazil, Venezuela, Ecuador, and Cuba, with large numbers of plants yielding chaulmoogra oil, found useful in treating leprosy. Hawaii, Porto Rico, and the Canal Zone, have also received shipments of the much desired plants and chaulmoogra trees will soon be fruiting widely in tropical America.

Seed for these plants were obtained in the wilds of Siam and Burma during a series of explorations begun in 1920 by the department's plant hunter, J. F. Rock. Chaulmoogra oil is now obtained from India where it is pressed cold and imported at great expense, but experts hope that within ten years tropical America will be supplying its own oil for the cure of leprosy.

During a period of fourteen months ended March 15, 1924, fifty per cent. of the leprosy patients at the Kalihi Leprosy Hospital in Hawaii have recovered and been paroled as a result of chaulmoogra oil treatment, and during the past five years 260 patients have been discharged as cured.

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American Chemical Society Activities.—The American Chemical Society at its spring meeting in Washington, D. C., announced its adhesion to the plan for a million dollar national institute for colloidal research. This project has the support of the National Research Council and the National Academy of Sciences, and will be located, it is expected, at the University of Wisconsin. Dr. Edgar F. Smith, provost emeritus of the University of Pennsylvania, presided at the final session of the society's section of chemical education. Sessions were also held by the divisions of petroleum, rubber, agriculture and food, physical and inorganic, sugar, organic and gas and fuel chemistry. A feature of the final session was the presentation of eight papers describing activities of Federal bureaus relating to industrial chemistry.

The amazing expansion of chemistry in this country, now embracing manufactured products valued at $62,000,000,000, demands the adoption of a nation wide system of accident prevention and industrial health, it was asserted in a report of the committee on occupational diseases and hazards in the chemical trades. To devise means of checking inroads upon workers through disease and violence and to prevent extension of contagion to families, a complete survey "without partisan zeal," was urged by the committee, the chairman of which was Dr. Lewis W. Fetzer, of Dallas, Texas. The committee emphasized the advisability of subjecting every applicant for work in a chemical industry to a rigid physical examination. "One of the most difficult tasks in this connection lies in singling out persons who may later prove an industrial health liability," the committee said. "It is here that we have to draw a line of demarcation between diseases or conditions which are primarily caused by a particular line of work and others which are aggravated by the same operation. Periodical examinations of the personnel at frequent intervals will correct much of this. It is the only tangible way of avoiding what would otherwise be costly processes."

A study of health conditions, under the auspices of the United States Public Health Service, was made among 916 chemical workers with respect to earnings. Of these 629 were married men, supporting one or more dependents. The list of diseases of the skin ascribed to occupation is growing, according to the committee, which said that many of the cases are usually mistaken for a nonoccupational eczema. The committee said that instances of dermatoses from coming in contact with the lacquer used on mah jong sets are reported. "The Japanese and Chinese employ a lacquer which comes from Rhus vernis," it was stated. "Contact with either the plant or its extract will cause dermatitis which resembles poison ivy poisoning." Substances used in the dyeing of furs and in cosmetics were given as other sources of poisoning. Match box dermatitis results from contact with matches and the striking surface of match boxes. When zinc oxide, in the brass industry, is inhaled, it sometimes produces, it has been found, a chain of symptoms collectively termed brass founders' ague. Zinc oxide, it was said, daily is receiving greater industrial application, and now is extensively used in the manufacture of paint, compounding of rubber goods, making of linoleum, oilcloth, glass, porcelain, and the preparation of zinc salts.

There is much to be learned about radium, said the report, recording that observations made on the physical condition of persons, male and female, engaged in measuring radium preparations in the bureau of standards here, showed during a period of a year nothing of special significance, though it is known that individuals exposed to large amounts of radiation frequently experience harmful physical results. Chemists, it was declared, are looking forward to early clarity of the situation as to carbon monoxide poisoning. "Poisonings, with fatality," it was said, "have been recorded very frequently from this source during the past year, and much of it has occurred as a result of exposure to illuminating and heating gas and from the automobile exhaust gases." The committee records a notable advance in industrial hygiene in other countries, and urges greater attention to the subject by American chemists.

Pan-Pacific Research Institute Established.—The opening of the new Pan-Pacific Research Institute, which is to be an international establishment for the scientific study of food resources in the Pacific area, has been made possible by the gift to the institution of the Castle home, one of the largest residences in Honolulu, together with four acres of adjacent land. It is expected that this will be the nucleus of a Pan-Pacific University, which has been planned for several years. The organization of this institution will be unique in that it will be truly international. It will be neither American, nor Hawaiian, nor Japanese, nor the property of any other single nationality, but will be governed by scientists from all the countries of the Pacific. The directorship of the institution has been offered to Dr. David Starr Jordan, chancellor emeritus of Stanford University.

Panama Continues War on Narcotic Drugs.—Panama, as the crossroads of the world, is the natural meeting place for all sorts of traffickers in vice and as has been mentioned before in these letters, the situation as regards the sale of the habit forming drugs is always an acute and ever present problem. Recently Mayor Pretelt, of Panama City, adopted the policy of giving persons convicted of engaging in the drug traffic the most severe sentence which the law permits and in the case of foreigners, to deport them on the expiration of their prison sentence. Since they are sent to the penal colony, Coiba Island in the Pacific Ocean, to hard labor, a prison sentence is not altogether a pleasure trip. In the case of Panamans, they are exiled when they have finished a term of jungle labor under the tropical sun. Recently sentences of two years' imprisonment and two years' banishment were imposed on two men and one woman.

A Diagnostic Cancer Clinic in Washington.—The Medical Society of the District of Columbia is planning to open a diagnostic cancer clinic in the Medical Building in conformity with the efforts of the American Society for the Control of Cancer, to impress upon the public the fact that early diagnosis and attention constitute the sole means of combating the disease. This action was brought about largely at the instance of Dr. H. H. Kerr, chairman of the local committee on cancer control.

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Homicides and Automobile Fatalities During July.—Figures compiled by the Metropolitan Life Insurance Company, based upon returns from fifteen million industrial policyholders in America and Canada, show that the July death rate from homicide, 9.1 to 100,000 insured, is the highest for any single month on record, with the single exception of October, 1923. Automobile fatalities showed a considerable increase as compared with June, and a rise of more than nineteen per cent. over July of last year. All fatal accidents, considered as a group, increased more than one third over the June figure and also registered a considerable rise over that for July, 1923. Among the industrial policyholders as a whole, however, the death rate from all causes, 8.4 per 100,000, was identical with that for the same month of 1923, and lower than for June, 1924.

Low Death Rate During First Half of Year.—The first half of 1924 has probably registered a lower death rate than was ever experienced for the first six months of any year in the history of the United States and Canada. This is indicated by the mortality records of the industrial policyholders of the Metropolitan Life Insurance Company, as announced by its statistical department which has just completed an analysis of the data.

After an uninterrupted rise for four years, a decline in the diabetes death rate began coincident with the increasing use of insulin in 1923. For the first six months of 1924, the fall amounted to 27.5 per cent. among the white policyholders and to more than ten per cent. among the colored. Although there is, as yet, no positive proof that the reduction is the direct result of the increasing use of insulin, there is reason to hope the phenomena are connected.

The cancer death rate was a little lower than that in evidence at this time last year. The death rate from alcoholism declined slightly. Deaths from acute poisoning by wood and denatured alcohol appear to be decreasing in the industrial population. Fatal accidents showed a little more satisfactory record. The death rates from automobile fatalities continued to increase—only slightly among the whites but about ten per cent. among the colored. There have been fewer suicides.

The typhoid fever rate is still falling and there is promise that a new minimum will be registered in 1924. Diphtheria mortality in the industrial population has been running lower than ever before. Scarlet fever and whooping cough, it is true, show practically the same death rates as for the corresponding period of last year. However, this really indicates improvement, in view of the much greater number of infant lives exposed to risk and covered by the data this year. There has been no general prevalence of epidemic influenza thus far. The mortality from lobar pneumonia decreased markedly among the white policyholders and slightly among the colored. Bronchial pneumonia caused more deaths than during the same period of last year; but this, again, was due to the relatively high number of infants concerned. An increase in the rate for diarrheal diseases is explained on the same ground. The mortality from diseases incidental to pregnancy and child birth declined among white women, but this improvement did not obtain for colored women.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LECTURES ON ELECTRO-PHYSIOTHERAPY. Chicago: H. G. Fischer and Company, Inc., 1924. Pp. 354.

LA SCARLATINE. Par Dr. M. Brelet. Bibliothèque des Connaissances Médicales. Paris: Ernest Flammarion, 1924. Pp. 244.

TEXTBOOK OF PSYCHIATRY. By Prof. Dr. Eugen Bleuler. Authorized English Edition by A. A. Brill, Ph. B., M.D. New York: The Macmillan Company, 1924. Pp. 635.

LIFE INSURANCE EXAMINATION. Edited by Frank W. Foxworthy, Ph.B., M.D. One Hundred and Fifty-Six Illustrations. St. Louis: The C. V. Mosby Company, 1924. Pp. 738.

THE ROMANCE OF A LIVING TEMPLE. A Study of the Human Body. By Frederick M. Rossiter, B.S., M.D., L.C.R.P., M.R.C.S., London. New York: George Sully and Company, 1924. Pp. 254.

DIABETIC MANUAL. For the Mutual Use of Doctor and Patient. By Elliott P. Joslin, M.D. Illustrated. Third Edition, Thoroughly Revised. Philadelphia and New York: Lea and Febiger, 1924. Pp. 211.

EPIDEMIC ENCEPHALITIS. (Encephalitis Lethargica.) By Arthur J. Hall, M.A., M.D. Camb., F.R.C.P. Lond. With 17 Plates (one fully colored) and Other Illustrations. New York: William Wood and Company, 1924. Pp. 229.

THE INTERNAL SECRETIONS. For the Use of Students and Physicians. By Dr. Arthur Weil. Authorized Translation of Third German Edition, by Jacob Gutman, M.D., Phar. D., F.A.C.P. New York: MacMillan Company, 1924. Pp. 287.

DIABETES. Its Treatment by Insulin and Diet. A Handbook for the Patient. By Orlando H. Petty, B.S., A.M., M.D., F.A.C.P. With Several Illustrations. Foreword by Dr. John H. Deaver. Philadelphia: F. A. Davis Company, 1924. Pp. 111.

CHIRURGISCHE OPERATIONSLEHRE. Von Professor Dr. Otto Zuckerkandl. Sechste umgearbeitete und vermehrte Auflage nach des Verfassers Tod herausgegeben von Professor Dr. Ernst Seifert. Mit 487 Abbildungen. Lehmanns medizinische Lehrbücher, Band VII. München: J. F. Lehmanns Verlag, 1924. Pp. 412.

HOSPITAL SITUATION IN GREATER NEW YORK. Report of a Survey of Hospitals in New York City by the Public Health Committee of the New York Academy of Medicine. With Illustrations. Prepared by E. H. Lewinski-Corwin, Ph. D. New York and London: G. P. Putnam's Sons, 1924. Pp. 356.

INTRODUCTION TO THE STUDY OF THE MIND. For the Use of Medical Students. Beginners in Psychiatry, Social Workers, and All Those Interested in Mental Hygiene. Nervous and Mental Disease Monograph Series No. 38. By William A. White. Washington: Nervous and Mental Disease Publishing Company, 1924. Pp. 116.

LEHRBUCH UND ATLAS DER RÖNTGENDIAGNOSTIK IN DER INNEREN MEDIZIN UND IHREN GRENZGEBIETEN. Herausgegeben von Franz M. Groedel. Veirte, vollkommen umgearbeitete und wesentlich erweiterte Auflage. Mit 712 Abbildungen auf 179 Glanzdruk-Tafeln und mit 720 Textabbildungen. Lehmann's Medizinische Atlanten, Band 7. München: J. F. Lehmann's Verlag, 1924. Pp. 1109.

AMPUTATIONS. Operative Technique—Formation and After-Treatment of the Stump from the Standpoint of Prosthesis. A Study Based on Seventeen Hundred Cases of Amputation for Injuries and Disease Occurring in the World War and Since Its Termination. By Norman Thomas Kirk, M.D., F.A.C.S., Major, Medical Corps, U. S. Army. Published under the authority and with the approval of the Surgeon General, U. S. Army. Washington: Medical Interpreter Company, 1924. Pp. 110.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 9 NEW YORK, WEDNESDAY, NOVEMBER 5, 1924 WHOLE No. 2292

Life Expectancy With Aortic Regurgitation*

FREDRICK A. WILLIUS, M.D.,
and JULIA FITZPATRICK, B.A.,
Rochester, Minn.,
Section on Cardiology, Mayo Clinic

In an attempt to determine as accurately as possible the life expectancy of patients suffering from aortic regurgitation, 463 cases were studied. The observations covered a period of eight years.

Two hundred ninety-six cases (sixty-four per cent.) were nonsyphilitic, while 167 (thirty-six per cent.) were syphilitic in origin. This relationship undoubtedly would be reversed in many localities, yet is proportionate to the general incidence of syphilis as observed in the Mayo Clinic.

TABLE I
NONSYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY IN THE COMPLETE GROUP

	Sex			Cardiac deaths					Patients living			
Decade	Total	Males	Females	Patients heard from	Cases	Per cent.	Average time from examination, months	Deaths from other causes	Cases	Per cent.	Improved	Unchanged	Worse
10 to 19	31	23	8	23	8	35	8.6	1	14	61	9	4	1
20 to 29	83	73	10	55	22	40	21.3	6	27	49	13	4	10
30 to 39	75	61	14	52	13	25	14.3	10	29	56	7	10	12
40 to 49	50	39	11	29	17	59	19.7	2	10	34	4	2	4
50 to 59	39	31	8	28	11	39	14.0	5	12	43	5	3	4
60 to 69	15	12	3	10	5	50	2.9	2	3	30	1	1	1
70 to 79	3	3	0	3	2	67	4.5	1	0	0	0	0	0
Total ...	296	242	54	200	78	39	15.7	27	95	48	39	24	32

In order to avoid misinterpretation, we wish to define clearly the character of the material that forms the basis of this investigation, since groups of similar cases differ in certain respects in various clinics. This is particularly true of the severity of the associated heart failure. The majority of patients with cardiac disease coming to the Mayo Clinic represent a group displaying fairly well advanced involvement. Those with nonsyphilitic aortic regurgitation had the average degree (2)[1] of cardiac decompensation at the time of our examination, while that of the syphilitic group was 2+.

AGE INCIDENCE

The highest incidence of cases of nonsyphilitic aortic regurgitation occurred in the third and fourth decades of life in which eighty-three and seventy-five cases, respectively, are recorded (Fig. 1). It is interesting to contrast this with cases of syphilitic origin, in which the highest incidence occurs in the fourth decade (seventy-four cases). The acquisition of syphilis is notoriously dominant in the second and third decades of life, and as a long latent period, averaging eighteen years (9), elapses from the time of the initial lesion of the disease until cardiovascular symptoms are manifested, the difference in incidence in the two groups is readily explained. There is an abrupt decline in the incidence of aortic regurgitation of both types in the succeeding decades.

SEX INCIDENCE

Our study discloses a marked discrepancy in the sex incidence of aortic regurgitation. In the nonsyphilitic group there were 242 males (eighty-two per cent.) and fifty-four females (eighteen per cent.); a similar ratio occurred in the syphilitic group: 142 males (eighty-five per cent.) and twenty-five females (fifteen per cent.). The infrequency of aortic regurgitation in women was also observed by Gillespie in a review of 2,368 cases of heart disease.

CARDIAC MORTALITY

Seventy-eight (thirty-nine per cent.) of the patients with nonsyphilitic aortic regurgitation died of cardiac disease on an average of fifteen and seven tenths months following our examination (Table I).

TABLE II
SYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY IN THE COMPLETE GROUP

	Sex			Cardiac deaths					Patients living			
Decade	Total	Males	Females	Patients heard from	Cases	Per cent.	Average time from examination, months	Deaths from other causes	Cases	Per cent.	Improved	Unchanged	Worse
20 to 29	9	8	1	8	2	25	1.0	2	4	50	1	1	2
30 to 39	36	29	7	30	11	37	11.6	0	19	63	11	5	3
40 to 49	74	63	11	58	30	52	17.0	4	24	41	6	7	11
50 to 59	35	31	4	29	12	41	18.0	1	16	55	8	1	7
60 to 69	12	10	2	12	8	67	13.0	1	3	25	1	0	2
70 to 79	1	1	0	0	..	..	...	..	..	..	..	..	..
Total ...	167	142	25	137	63	46	15.6	8	66	48	27	14	25

*Submitted for publication August 28, 1924.
[1]Valuation on a scale of 0 to 4.

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Ninety-five patients (forty-eight per cent.) are alive, and thirty-nine report their condition improved, twenty-four unchanged, and thirty-two worse.

The cardiac mortality in the syphilitic group is slightly higher, sixty-three patients (forty-six per cent.) succumbing on an average of fifteen and six tenths months after examination (Table II). Sixty-six patients (forty-eight per cent.) are living, and of these, twenty-seven are improved, fourteen unchanged, and twenty-five worse. It is interesting to note that when the cases are grouped according to

TABLE III

NONSYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATION I

Decade	Sex: Total	Sex: Males	Sex: Females	Cardiac deaths: Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	..	..	..	..	..	..	...	..	..	..	..	..	..
20 to 29	6	5	1	5	3	60	2.4	0	2	40	2	0	0
30 to 39	3	3	0	3	2	67	(?)	1	0	0	0	0	0
40 to 49	7	5	2	5	5	100	19.2	0	0	0	0	0	0
50 to 59	4	4	0	3	2	67	4.5	0	1	33	1	0	0
60 to 69	2	2	0	0	..	..	...	..	..	..	..	..	..
70 to 79	1	1	0	1	1	100	3.0	0	0	0	0	0	0
Total ...	23	20	3	17	13	76	9.6	1	3	18	3	0	0

TABLE IV

SYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATION I

Decade	Sex: Total	Sex: Males	Sex: Females	Cardiac deaths: Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
30 to 39	4	3	1	3	3	100	8.6	0	1	25	0	0	1
40 to 49	10	8	2	8	6	75	18.2	0	2	25	0	0	2
50 to 59	3	3	0	2	2	100	5.5	0	0	0	0	0	0
60 to 69	2	2	0	2	2	100	23.0	0	0	0	0	0	0
Total ...	19	16	3	15	13	87	14.0	0	2	13	0	0	2

significant electrocardiographic abnormalities, the cardiac mortality increases definitely.

T-WAVE NEGATIVITY IN DERIVATION I[2]

In twenty-three cases of nonsyphilitic aortic regurgitation the electrocardiograms revealed T-wave negativity in Derivation I. Thirteen patients (seven-

TABLE V

NONSYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATIONS I AND II

Decade	Sex: Total	Sex: Males	Sex: Females	Cardiac deaths: Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	1	1	0	1	0	0	...	0	1	100	1	0	0
20 to 29	5	5	0	4	3	75	11.5	0	1	25	1	0	0
30 to 39	2	1	1	1	0	0	...	0	1	100	1	0	0
40 to 49	3	3	0	3	3	100	31.5	0	0	0	0	0	0
50 to 59	2	2	0	2	1	50	5.0	0	1	50	0	0	1
60 to 69	1	1	0	1	1	100	3.0	0	0	0	0	0	0
70 to 79	0	..	..	..	..	..	...	..	..	..	..	..	..
Total ...	14	13	1	12	8	67	11.4	0	4	33	3	0	1

[2]T-wave negativity is independent of the action of digitalis.

ty-six per cent.) died of heart disease on an average of nine and six tenths months after examination (Table III). In the syphilitic group, the cardiac mortality is even higher, thirteen of the nineteen pa-

TABLE VI

SYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATIONS I AND II

Decade	Sex: Total	Sex: Males	Sex: Females	Cardiac deaths: Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
30 to 39	2	2	0	1	1	100	26.0	0	1	50	0	1	0
40 to 49	6	6	0	4	1	25	12.0	0	3	75	0	2	1
50 to 59	1	1	0	1	1	100	13.0	0	0	0	0	0	0
60 to 69	2	2	0	2	2	100	1.0	0	0	0	0	0	0
Total ...	11	11	0	8	5	63	10.6	0	3	37	0	2	1

tients (eighty-seven per cent.) dying within an average of fourteen months (Table IV).

T-WAVE NEGATIVITY IN DERIVATIONS I AND II[2]

Fourteen patients with electrocardiograms revealing T-wave negativity in Derivations I and II are recorded in the group having nonsyphilitic aortic regurgitation, and eight (sixty-seven per cent.) have died of cardiac disease on an average of eleven and

TABLE VII

NONSYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATIONS II AND III

Decade	Sex: Total	Sex: Males	Sex: Females	Cardiac deaths: Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	2	2	0	1	0	0	0	0	1	100	1	0	0
20 to 29	14	14	0	9	5	56	36.6	1	3	33	1	1	0
30 to 39	6	5	1	4	1	25	1.0	0	3	75	0	1	2
40 to 49	2	1	1	1	1	100	21.0	0	0	0	0	0	0
50 to 59	3	3	0	2	0	0	0	0	2	100	1	0	1
60 to 69	1	1	0	1	1	100	(?)	0	0	0	0	0	0
70 to 79	0	..	..	..	..	..	...	..	..	..	..	..	..
Total ...	28	26	2	18	8	44	29.2	1	9	50	3	2	4

four tenths months after observation (Table V). Heart failure was responsible for the death, within an average of ten and six tenths months, of five (sixty-three per cent.) of the eleven syphilitic patients with this graphic abnormality (Table VI).

T-WAVE NEGATIVITY IN DERIVATIONS II AND III[2]

T-wave negativity in Derivations II and III occurred in the electrocardiograms of twenty-eight pa-

TABLE VIII

SYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATIONS II AND III

Decade	Sex: Total	Sex: Males	Sex: Females	Cardiac deaths: Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
20 to 29	1	1	0	1	1	100	2.0	0	0	0	0	0	0
30 to 39	1	1	0	1	0	0	0	0	1	100	0	1	0
40 to 49	6	6	0	6	6	100	10.0	0	0	0	0	0	0
50 to 59	3	3	0	3	0	0	0	1	2	67	0	1	1
70 to 79	1	1	0	0	..	..	...	..	..	..	..	..	..
Total ...	12	12	0	11	7	64	8.9	1	3	26	0	2	1

tients with nonsyphilitic aortic regurgitation. Eight patients (forty-four per cent.) died of cardiac disease, an average of twenty-nine and two tenths months after examination (Table VII). Of the twelve patients with syphilis, seven (sixty-four per cent) died of heart failure an average of eight and nine tenths months after examination (Table VIII).

TABLE IX

NONSYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATIONS I, II AND III

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	0	..	..	..	..	..	...	..	..	..	..	..	..
20 to 29	6	6	0	4	2	50	4.5	0	2	50	2	0	0
30 to 39	12	11	1	8	2	25	30.0	1	5	63	1	2	2
40 to 49	0	..	..	..	..	..	...	..	..	..	..	..	..
50 to 59	3	3	0	2	1	50	11.0	0	1	50	1	0	0
60 to 69	1	1	0	1	1	100	5.0	0	0	0	0	0	0
70 to 79	0	..	..	..	..	..	...	..	..	..	..	..	..
Total ...	22	21	1	15	6	40	14.1	1	8	53	4	2	2

T-WAVE NEGATIVITY IN DERIVATIONS I, II AND III[2]

T-wave negativity in all derivations from heart disease in the electrocardiograms of twenty-two patients, with the nonsyphilitic type of aortic regurgitation, were noted. Six patients (forty per cent) died, an average of fourteen and one tenth months after examination (Table IX). This mortality is contrasted sharply with that of the syphilitic group in which seven (eighty-eight per cent.) of the eleven patients died of cardiac disease after an average of only seven and one tenth months (Table X).

TABLE X

SYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY WITH T-WAVE NEGATIVITY IN DERIVATIONS I, II AND III

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
30 to 39	3	3	0	1	1	100	2.0	0	0	0	0	0	0
40 to 49	6	5	1	6	5	83	8.1	0	1	17	0	0	1
50 to 59	2	2	0	1	1	100	7.0	0	0	0	0	0	0
Total ...	11	10	1	8	7	88	7.1	0	1	12	0	0	1

The composite cardiac mortality with significant T-wave negativity in the nonsyphilitic patients was fifty-six per cent. (Table XI), and while considerably higher than the mortality of the complete group, was distinctly less than that accompanying these graphic abnormalities in the syphilitic group in which the cardiac death rate was seventy-six per cent. (Table XII). The higher mortality in the syphilitic group is distinctly in accord with our clinical impressions, as the average patient with syphilitic aortic regurgitation who presents also significant T-wave negativity in the electrocardiogram has more cardiac damage and is distinctly more severely ill than the corresponding patient with the nonsyphilitic lesion. It may be noted that fifty-one per cent. of the syphilitic patients displaying significant T-wave negativity in the electrocardiogram had anginal attacks.

TABLE XI

NONSYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY WITH SIGNIFICANT T-WAVE NEGATIVITY

	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
T-wave negativity in:													
Derivation I	23	20	3	17	13	76	9.6	1	3	18	3	0	0
Derivations I & II...	14	13	1	12	8	67	11.4	0	4	33	3	0	1
Derivations II & III	28	26	2	18	8	44	29.2	1	9	50	3	2	4
Derivs. I, II, & III..	22	21	1	15	6	40	14.1	1	8	53	4	2	2
Total	87	80	7	62	35	56	15.2	3	24	39	13	4	7

TABLE XII

SYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY WITH SIGNIFICANT T-WAVE NEGATIVITY

	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
T-wave negativity in:													
Derivation I	19	16	3	15	13	87	14.0	0	2	13	0	0	2
Derivations I & II...	11	11	0	8	5	63	10.6	0	3	37	0	2	1
Derivations II & III	12	12	0	11	7	64	8.9	1	3	26	0	2	1
Derivs. I, II & III..	11	10	1	8	7	88	5.7	0	1	12	0	0	1
Total	53	49	4	42	32	76	11.2	1	9	21	0	4	5

TABLE XIII

NONSYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY WITH ABERRANT Q.R.S. COMPLEXES IN ALL DERIVATIONS

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	1	1	0	1	1	100	12.0	0	0	0	0	0	0
20 to 29	1	1	0	1	1	100	31.0	0	0	0	0	0	0
30 to 39	4	3	1	2	1	50	8.0	0	1	50	0	0	1
40 to 49	1	1	0	0	..	...	...	..	..	..	..	..	..
60 to 69	3	3	0	3	3	100	15.3	0	0	0	0	0	0
Total ...	10	9	1	7	6	86	16.1	0	1	14	0	0	1

It has been our experience that the presence of significant T-wave negativity in any type of cardiac disease is attended by a high cardiac mortality. Previous reports (5, 6, 7, 8) from the Mayo Clinic,

TABLE XIV

NONSYPHILITIC AORTIC REGURGITATION
CARDIAC MORTALITY WITH AURICULAR FIBRILLATION

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
20 to 29	3	3	0	3	1	33	74.0	0	2	67	2	0	0
30 to 39	5	1	4	3	1	33	11.0	0	2	67	1	0	1
40 to 49	6	3	3	4	3	75	24.6	0	1	25	0	0	1
50 to 59	3	2	1	2	1	50	5.0	1	0	0	0	0	0
Total ...	17	9	8	12	6	50	27.3	1	5	42	3	0	2

dealing with this subject, have repeatedly called attention to the serious prognostic significance of these graphic changes and are referred to again, to emphasize their importance, and to coordinate them with the present study. Similar studies by other observers have confirmed our observations (1, 3, 4).

TABLE XV

NONSYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY WITH DELAYED A-V CONDUCTIONS*

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	2	2	0	2	1	50	22.0	1	0	0	0	0	0
20 to 29	4	4	0	4	4	100	28.6	0	0	0	0	0	0
30 to 39	4	4	0	3	2	67	0.75	1	0	0	0	0	0
40 to 49	3	2	1	3	2	67	30.0	0	1	33	0	0	1
50 to 59	1	1	0	1	0	0	0	1	0	0	0	0	0
Total ...	14	13	1	13	9	69	21.3	3	1	8	0	0	1

R-R interval 0.22 to 0.36 second; average 0.27 second.

ABERRANT Q. R. S. COMPLEXES IN ALL DERIVATIONS

In the group of nonsyphilitic patients with aortic regurgitation, ten had electrocardiograms with aberrant Q. R. S. complexes in all derivations. Information regarding seven patients was obtained; six (eighty-six per cent.) are dead as the result of heart disease, an average of sixteen and one tenth months after examination (Table XIII). The one patient alive reports his condition as worse. Only one patient of the syphilitic group had this graphic finding, and death occurred from heart disease three days after the examination.

TABLE XVI

NONSYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY IN CASES WITHOUT IMPORTANT ELECTROCARDIOGRAPHIC FINDINGS

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
10 to 19	25	17	8	18	5	28	8.0	1	12	67	7	4	1
20 to 29	47	38	9	27	6	22	7.4	5	16	59	6	3	7
30 to 39	46	37	9	33	6	18	14.9	8	19	58	5	7	7
40 to 49	29	25	4	14	4	29	12.3	2	8	57	4	2	2
50 to 59	24	18	6	17	6	35	20.6	4	7	41	2	3	2
60 to 69	7	4	3	5	0	0	0	2	3	60	1	1	1
70 to 79	2	2	0	2	1	50	5.0	1	0	0	0	0	0
Total ...	180	141	39	116	28	24	12.6	23	65	56	25	20	20

TABLE XVII

SYPHILITIC AORTIC REGURGITATION

CARDIAC MORTALITY IN CASES WITHOUT IMPORTANT ELECTROCARDIOGRAPHIC FINDINGS

Decade	Sex: Total	Sex: Males	Sex: Females	Patients heard from	Cardiac deaths: Cases	Cardiac deaths: Per cent.	Cardiac deaths: Average time from examination, months	Cardiac deaths: Deaths from other causes	Patients living: Cases	Patients living: Per cent.	Patients living: Improved	Patients living: Unchanged	Patients living: Worse
20 to 29	7	6	1	6	1	17	1.0	2	3	50	1	1	1
30 to 39	24	18	6	22	5	23	22.0	0	17	77	9	6	2
40 to 49	41	33	8	30	9	30	28.2	3	18	60	4	6	8
50 to 59	26	22	4	22	9	41	23.1	0	13	59	8	2	3
60 to 69	8	6	2	8	4	50	14.6	1	3	38	1	1	1
Total ...	106	85	21	88	28	32	21.0	6	54	61	23	16	15

AURICULAR FIBRILLATION

Auricular fibrillation, in our experience, is a rare disorder in aortic disease. It occurred in seventeen cases (six per cent.) of nonsyphilitic aortic regurgitation, and the death of six (fifty per cent.) was attributable to cardiac disease (Table XIV). There were only two cases (one per cent.) in the syphilitic group, and both patients died of heart disease on an average of five and five tenths months after observation.

DELAYED A-V CONDUCTION[3]

Fourteen patients with nonsyphilitic aortic regurgitation had delayed auriculoventricular conduction, the conduction time varying from 0.22 to 0.36 second. Nine (sixty-nine per cent.) died from heart disease twenty-one and three tenths months following examination (Table XV). Only three of the patients with syphilis had this conduction disturbance (0.22 to 0.28 second); two have been traced: one died of heart disease in seven months, and one is worse.

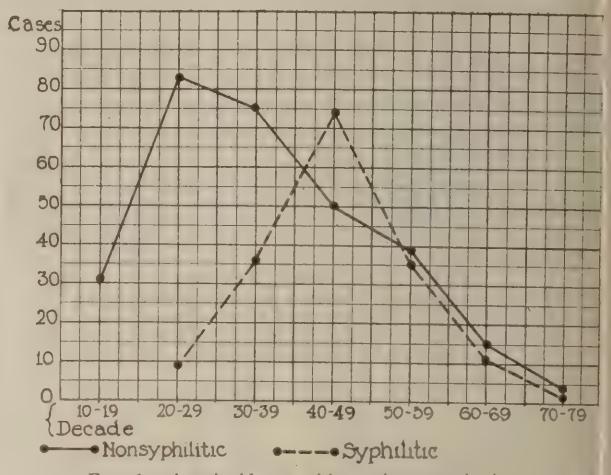

FIG. 1.—Age incidence with aortic regurgitation.

Another group was studied, comprising cases in which the foregoing electrocardiographic disorders were absent. In both the nonsyphilitic and the syphilitic groups, the lowest cardiac mortality was obtained, twenty-four per cent. and thirty-two per cent. respectively (Tables XVI and XVII).

SUMMARY AND CONCLUSIONS

1. Cardiac mortality in the complete group; a, nonsyphilitic aortic regurgitation, thirty-nine per cent., and b, syphilitic aortic regurgitation, forty-six per cent.

2. Cardiac mortality with T-wave negativity in Derivation I; a, nonsyphilitic aortic regurgitation, seventy-six per cent., and b, syphilitic aortic regurgitation, eighty-seven per cent.

3. Cardiac mortality with T-wave negativity in Derivations I and II; a, nonsyphilitic aortic regurgitation, sixty-seven per cent., and b, syphilitic aortic regurgitation, sixty-three per cent.

4. Cardiac mortality with T-wave negativity in Derivations II and III; a, nonsyphilitic aortic regurgitation, forty-four per cent., and b, syphilitic aortic regurgitation, sixty-four per cent.

[3]Delayed A-V conduction not abolished by atropine.

5. Cardiac mortality with T-wave negativity in Derivations I, II, and II; a, nonsyphilitic aortic regurgitation, forty per cent., and b, syphilitic aortic regurgitation, eighty-eight per cent.

6. Cardiac mortality with composite T-wave negativity; a, nonsyphilitic aortic regurgitation, fifty-six per cent., and b, syphilitic aortic regurgitation, seventy-six per cent.

7. Cardiac mortality with aberrant Q. R. S. complexes in all derivations; a, nonsyphilitic aortic regurgitation, eighty-six per cent., and b, syphilitic aortic regurgitation, one case; the patient died from heart disease.

8. Cardiac mortality with auricular fibrillation; a, nonsyphilitic aortic regurgitation, fifty per cent., and b, syphilitic aortic regurgitation, two cases; both patients died from heart disease.

9. Cardiac mortality with delayed A-V conduction; a, nonsyphilitic aortic regurgitation, sixty-nine per cent., and b, syphilitic aortic regurgitation, three cases; two patients were traced: one had died from heart disease; one was worse.

10. Cardiac mortality in cases in which the foregoing graphic abnormalities were absent; a, nonsyphilitic aortic regurgitation, twenty-four per cent., and b, syphilitic aortic regurgitation, thirty-two per cent.

We believe that this study, and previous reports, show that significant abnormalities in the electrocardiogram are attended by a relatively high cardiac mortality, and are of distinct prognostic value.

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The Chronic Anemias and Related Conditions*

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The viewpoint of this paper will be that of the clinic. To keep within limits, physiology, pathology and even some useful diagnostic data will have to be omitted. Doubtless there will appear statements too much condensed to be strictly accurate, but it is hoped they will not be clinically misleading.

So little is known of the etiology of these conditions that any classification must be recognized as tentative. Hodgkin's disease, for example, has been thought to be a form of tuberculosis, has been attributed to a diphtheroid bacillus, and is held by some now to be a variety of sarcoma. Intermediate between the most widely varying blood pictures and clinical types, the gap can be filled by cases representing insensible gradations, leaving in doubt at times the proper classification of a given case. Under such circumstances, one can only aim at the maximum therapeutic benefit to the patient. An example is the following case:

Case I.—Mrs. W. H., aged forty-three, a traveling advertising agent, complained of puffiness about the eyes for two years. There were none of the usual complaints of leucemia. The spleen was not palpable; the liver edge could barely be felt. No evidence of bone tumor could be found. There was no lymphatic enlargement, unless a wheeze over the left hilum indicated bronchial lymph node involvement. The blood picture was as follows: Red cells 5.2 million; hemoglobin 78; color index .75; leucocytes 10,000; polynuclear neutrophiles 35.5 per cent; lymphocytes 27.5 per cent.; large mononuclears 1.5 per cent.; polynuclear eosinophiles 7.5 per cent.; mast cells 2 per cent.; neutrophilic myelocytes 17.5 per cent.; eosinophilic myelocytes 2 per cent.; basophilic myelocytes 1.5 per cent.; myeloblasts 5 per cent. With admirable frankness the report came from the laboratory with the remark: "The more I study this slide, the less I know about it." The patient, under the urge of her craft, left the city with the advice to consult a competent medical man at the first opportunity. If the myelocytes indicated myeloid leucemia, the case presented unusual clinical features and leucocyte count.

The distinction between primary and secondary anemia is not altogether a satisfactory one. The secondary character of an anemia is clear when the cause is known, but chlorosis and pernicious anemia have little in common to justify their being grouped together as primary. I have no intention of suggesting a new terminology, but I think something is gained if primary comes to mean to us prognostic caution, and secondary implies at least an expectation of arriving at the cause. The terms then become guiding principles whether the notion arises out of a study of the blood smear alone or the clinical picture as a whole.

Even when one concludes that he is dealing with a primary anemia, he should not be blind to factors

*Read before the Alleghany County Medical Society at Hot Springs, Virginia, June 13, 1924.

of secondary importance which may tend to offset reconstructive measures.

CASE II.—Mrs. R., aged forty-six; diagnosis pernicious anemia. Two transfusions resulted in a rise of hemoglobin from 50 to 80, red cells from 1.7 million to 3.3 million, with a corresponding improvement in the appearance of the smear and the patient's condition. After two profuse menstrual periods the hemoglobin was 40 and the red cells 1.4 million. Menstruation was stopped by radium, and without further transfusions the hemoglobin rose to 53, reds to 2.5 million and a distinct gain in strength and appearance was noted. Further transfusions will probably have to be employed.

The blood examination often proves to be helpful when least expected. Especially there are a half dozen symptoms and signs which are most often so explained. These are weakness, vertigo, dyspnea and tingling; pallor, palpable spleen, lymph node enlargement, gastric anacidity and certain cord signs. In the presence of these symptoms and signs the main data upon which the ultimate diagnosis is likely to be reached are as follows:

I. ANEMIA

An absolute reduction of hemoglobin and red cells without regard to the ratio between the two.

II. ETIOLOGY

The question of etiology, whether or not a cause is demonstrable. Even though the anemia may have all the earmarks of the Addisonian type, if cancer is present one will usually be inclined to regard the cancer as the cause of the anemia. In fact, rarely are we satisfied to diagnose pernicious anemia without röntgen ray examination for gastric cancer, if this method is available. Of course, there is a long list of conditions which may at times cause severe anemia, but for practical purposes the field may be kept fairly narrow. Syphilis, malaria, tuberculosis and lead poisoning may be frequent causes in certain communities, but I do not think they are in ours. When their presence is characterized by marked blood changes, the cause is not usually difficult to recognize. Neither do I think infected tonsils or abscessed teeth are frequent causes of anemia of this grade, though either may have been the portal of entry for infection of more vital organs. More deserving of emphasis, I think, are slow, prolonged loss of blood, as from hemorrhoids, menorrhagia, cirrhosis of the liver, and peptic ulcer; and such chronic diseases as cancer, nephritis, septic endocarditis or other chronic sepsis, and intestinal parasites. In the last, eosinophilia may be notably absent if the anemia is severe. The presence of a low grade fever throws little light on the type of disease, as it is common to all varieties of advanced anemia. The following are illustrative cases:

FIBROID UTERUS

CASE III.—Miss F. N., aged twenty-eight, single. For six years menstruation, though regular, was profuse. As a result the hemoglobin was 26; red cells 2.7 million; color index 0.5. There was considerable poikilocytosis, polychromatophilia and granular degeneration, but no nucleated forms. Removal of an enlarged, boggy uterus with multiple fibroids resulted in a satisfactory state of health.

A similar case had been diagnosed splenic anemia because the spleen was thought to be palpable and the physician accepted the patient's report of negative pelvic examinations at the hands of three practitioners:

CASE IV.—Mrs. B. N. J., aged thirty-two; hemoglobin 29; red cells 2.9 million; color index 0.5; some poikilocytes, megalocytes and microcytes but no nucleated red cells. It was suggested that the pelvic examination be repeated, with the result that the family physician promptly recognized a fibroid uterus. Hysterectomy was followed by an early return of the blood to normal.

SEPTIC ENDOCARDITIS

CASE V.—T. L. D., male, aged fifty-four. History of weakness for six months, fever, and loss of weight. Temperature 100°; pulse 82; blood pressure 100/50; diastolic murmur at the base of the heart; heart slightly enlarged according to orthodiagram; no embolic nodules; hemoglobin 57 per cent.; red cells 4.2 million; color index 0.69; leucocytes 20,400; polynuclears 93 per cent.; lymphocytes 7 per cent. A diagnosis of chronic septic endocarditis was made. Death followed six weeks later.

HOOKWORM

CASE VI.—Miss V. W., aged seventeen, complained of weakness, vertigo and dyspnea on exertion. Physical examination revealed what was believed to be a congenital heart lesion with considerable hypertrophy. Hemoglobin 22 per cent.; red cells 1.5 million; color index 0.73; considerable microcytosis, megalocytosis and poikilocytes; no nucleated forms; leucocytes 8,200; polynuclears 72 per cent.; lymphocytes 24 per cent; large mononuclears 4 per cent.; no eosinophiles. The feces showed a great abundance of hookworm eggs. The anemia was attributed to these parasites and was overcome by treatment for hookworm.

There are times when one doubts whether his idea of the cause was correct because of the failure of the anemia to respond to treatment directed at removing the cause. At times, of course, there has been an error; but there is, I think, such a thing as a depression of function of important organs, both bloodmaking and others, due to the prolonged anemic condition, in short, a vicious circle, which may make complete recovery very slow even though the primary cause has been removed.

CASE VII.—C. H. B., aged fifty-seven, suffered from what appeared to be a secondary type of anemia though for many months the cause could not be determined. The hemoglobin went as low as 22, and the red cells to 2.7 million. Proctoscopical examination was reported to be negative but later it revealed bleeding hemorrhoids which were regarded as the source of his trouble. In the meantime an intestinal condition not unlike sprue had developed. Removal of the hemorrhoids resulted in slow improvement, but many months more were required before the bowel movements became normal. This latter condition was believed to be due to a depression of pancreatic function, and pancreatin in large dose was used over a long period. The hemoglobin has never risen above 60, but the patient seems to be in very good health.

III. The Color Index

On the basis of a hemoglobin set at 100 and red cells at five million to the c.mm., the normal color index is fixed at 1. Because there is no absolute normal for either hemoglobin or the number of red cells, there is no absolute normal for the color index. However, most severe anemias, other than pernicious anemia, show a hemoglobin reduced out of proportion to the reduction of red cells, with a correspondingly low color index; whereas in pernicious anemia the color index is very likely to be 1 or higher.

IV. The Leucocytes

The number of white cells is apt to be either of very definite diagnostic value as in the leucemias, or of little or no help. A normal or low white count, with a differential count approximately normal or showing only a relative lymphocytosis, is a finding more or less common to all varieties of true anemia. Exceptions may be noted and leucocytosis observed due to pyogenic bacteria, either causative or secondary invaders. Hodgkin's disease, though usually characterized by a leucocyte count approximately normal, may give a leucocytosis between twenty and thirty thousand, with a polynuclear increase. Reference has been made above to the difficulty in classifying certain cases with abnormal blood pictures. Giffin (1) reported a case of persistent eosinophilia with hyperleucocytosis and splenomegaly in a man aged thirty-one, and was inclined to regard the condition as not a true leucemia, though the white cells finally, after splenectomy, rose to 211,000. Polynuclear eosinophiles were present in proportions of fifty-seven to ninety per cent.

ACUTE LYMPHATIC LEUCEMIA

Case VIII.—F. O. S., male, a physician, aged thirty-one, returning from France in 1919, developed lymphatic leucemia of the acute variety, with general lymph node enlargement. The disease ran a course somewhat similar to typhoid fever, and the patient died about six weeks after onset. The leucocyte count ten days before death was 44,500, with 82.5 per cent. lymphocytes and 2.5 per cent. large mononuclears; hemoglobin 40 per cent. Four days later the count was 36,000, ninety per cent. of which were small lymphocytes; hemoglobin, twenty-two per cent.

CHRONIC LYMPHATIC LEUCEMIA

Case IX.—Mrs. J. M., aged fifty-nine, complained of failing vision and progressive weakness and loss of weight. Her oculist reported high intraocular tension, marked iritis, and hemorrhages into the vitreous and retinæ. Iridectomy was done. The tonsils were much hypertrophied. There were hard, enlarged, discrete nodes throughout the neck, in both axillæ some nodes as large as a lemon, and a number of enlarged nodes in each groin. The spleen was not palpable, the liver was felt two inches below the costal border, and hard masses of lymph nodes were palpable in the abdominal cavity. Two weeks later the spleen was felt one inch below the costal margin. Sugar was present in the urine. Blood sugar was 245 mg. to the 100 cc. Leucocytes 928,000; polynuclears two per cent.; small lymphocytes ninety-eight per cent.; hemoglobin 60; red cells 3.6 million; color index 0.83.

Three months later, under x ray therapy by Dr. Fred M. Hodges, and moderate carbohydrate restriction, the patient had gained ten pounds in weight; the spleen was still palpable one inch below the ribs; two fairly largesized nodes were present in the right side of the neck. None were felt in the left side of the neck nor in either axilla. Some were still palpable in each groin. The leucocyte count was 300,000 with no alteration in the differential count. Blood sugar was 215 mg. There was no improvement in vision. In other respects the improvement noted was maintained for a period of six months.

MYELOID LEUCEMIA

Case X.—Mrs. S. T. S., aged forty-two, after x ray therapy had gained ten pounds in weight, presented a splenic enlargement half way to the level of the umbilicus, practically no superficial lymph node enlargement, and the following blood picture: hemoglobin fifty-nine per cent.; red cells 4.2 million; color index 0.69; leucocytes 63,000; polynuclears sixty-two per cent.; mast cells one per cent.; neutrophilic myelocytes nine per cent.; lymphocytes 18.5 per cent.; large mononuclears 7.5 per cent.; basophilic myelocytes two per cent. No report of the condition prior to beginning therapy was available.

V. The Red Cell Picture in the Smear

There is a picture of the red cells in the smear which pathologists recognize as a response of the bloodmaking organs, chiefly bone marrow, to an unusual demand. Immature forms are thrown out into the blood stream like a war worn country calling up its youthful reserves. Some, the normoblasts and megaloblasts, are nucleated; many are misshapen, pearshaped, pointed or having caudal elongations—poikilocytosis; there may be abnormal staining—polychromatophilia; a fine stippling is common. This picture may be approximated in any severe anemia, but it is seen in its completeness in pernicious anemia only. For brevity it will be referred to as the picture of regenerative effort.

VI. The Fragility of the Red Cells

This is observed according to a simple technic. The method in common use consists in observing the point at which hemolysis begins and ends in graduated hypotonic salt solutions. In normal cases hemolysis begins at about 0.45 per cent. and is complete at 0.35 per cent. If it begins and ends earlier resistance is decreased and fragility is greater than normal. In splenic anemia the resistance may be normal but in the hemolytic types is diminished; in pernicious anemia it is usually increased (2).

VII. Splenomegaly

There is no serious derangement of the bloodmaking organs that is not at times accompanied by splenomegaly. The degree of enlargement and the stage of the illness at which it is appreciable are important, but associated signs and symptoms are more so. In splenic anemia and in myelogenous leucemia, splenomegaly is apt to be an outstanding feature, both as to size and early appearance. In lymphatic leucemia the spleen is as a rule palpable but not greatly enlarged. In Hodgkin's disease the enlargement is not often very gross, and in the majority of cases the organ is not palpable; and the same statement will hold in pernicious anemia. In secondary anemias the spleen can often be felt, but it is usually

when the primary cause, such as malaria, syphilis and septic infection, may be in itself a cause of splenomegaly without grave anemia.

VIII. Liver Enlargement and Jaundice

In the leucemias the liver is, as a rule, enlarged, more grossly in the myeloid than in the lymphoid type. In pernicious anemia it is palpable rather more frequently than is the spleen, but hardly in more than one third of the cases. In Hodgkin's disease it is less frequently felt than in the leucemias or in pernicious anemia. In the more advanced stages of splenic anemia it becomes grossly enlarged. Jaundice is not common to the conditions under discussion, but may occur in any of them. It is the conspicuous feature of congenital or familial hemolytic jaundice, and a prominent feature of the acquired type of this affection.

IX. Lymph Node Enlargement

Along with the bone marrow, the spleen and the lymph nodes are functionally associated with blood formation and destruction. Though generalized adenopathy may occur in any of the anemias and leucemias, it is distinctly most prominent in lymphatic leucemia and Hodgkin's disease. There is a somewhat characteristic grouping like a bunch of grapes, and a brawny feel to the lymph nodes when involved in Hodgkin's disease. At times in the early stages of either lymphatic leucemia or pseudoleucemia, the superficial nodes fail to show enlargement. Enlarged mesenteric nodes may then be palpable, but röntgen ray examination of the mediastinum is a more fruitful line of investigation. When a superficial node is accessible, excision and microscopical examination may serve to distinguish Hodgkin's disease, sarcoma of different types, tuberculosis, lymphatic leucemia or syphilis.

A case offering diagnostic difficulty due to the absence of superficial lymph node enlargement, showed a hemoglobin of fifty per cent.; red cells 3.7 million; color index 0.6; leucocytes 26,400; polynuclears eighty-one per cent.; lymphocytes seventeen per cent.; eosinophiles two per cent. The spleen was palpable about two fingerbreadths below the costal margin. Röntgen ray report described "along the right border of the heart and aorta several discrete, more or less round, areas of density. These are near the sternum in front, the largest ones being close to the hilus area, and varying from a little more than an inch in diameter to about a half inch; with two similar areas to the left of the sternum opposite the second interspace." This report, in conjunction with the leucocyte count and splenomegaly, were interpreted as Hodgkin's disease, though the opportunity was not afforded to confirm the diagnosis microscopically.

A more classical picture of Hodgkin's disease was the following:

Case XI.—A. C., male, aged eleven. A month prior to admission cervical nodes began to enlarge, followed by abdominal swelling. Conglomerate brawny masses of nodes bulged on both sides of the neck, and were palpable in the axillæ and the groins. The abdomen was much distended, but the spleen could be outlined as more than filling the left upper quadrant. Hemoglobin was sixty-three per cent.; red cells four million; color index 0.75; leucocytes 8,400; polynuclears forty-two per cent.; lymphocytes fifty-six per cent.; mast cells two per cent. Death ensued a few months after the date of the record—April 6, 1917.

Longcope (3) and others have described under the term infectious mononucleosis or glandular fever a selflimited, febrile illness, characterized by general enlargement of the superficial lymph nodes, usually a palpable or moderately enlarged spleen, and a leucocyte count ranging from ten to twenty-six thousand, with the proportion of mononuclears from fifty to ninety-five per cent. These cells include, in addition to the small lymphocyte and large mononuclear cell of normal blood, a cell somewhat intermediate in size, with oval, kidney shaped or slightly lobulated nucleus, and a nongranular, basophilic protoplasm. The condition most nearly resembles acute leucemia, but differs in the early and marked enlargement of the lymph nodes, the absence of anemia and purpura, and the abnormal mononuclear cell referred to.

X. Gastric Anacidity

A total absence of free hydrochloric acid is perhaps the most constant finding in pernicious anemia. It is less influenced by periods of remission than is the blood picture. Its constancy would seem to offer a hopeful clue to investigators seeking an understanding of the etiology and essential pathology of the disease. We should not infer, however, that anacidity in an anemic patient establishes the diagnosis of pernicious anemia. Hurst and Bell (4) present interesting figures, reporting complete achlorhydria in four per cent. of one hundred normal individuals; 14.8 per cent. of sixty-three cases of various medical diseases; ninety-six per cent. of sixty-six cases of pernicious anemia; thirty-three per cent of ten cases of carcinoma of the stomach; one hundred per cent. of eight cases of subacute combined degeneration of the cord (which they consider to be due to a neurotoxin associated with the hemolytic toxin of pernicious anemia); in eleven per cent. of nine cases of tabes dorsalis; and in none of eight cases of disseminated sclerosis.

It is possible one occasionally may diagnose pernicious anemia without achlorhydria, but it is quite certain, on the other hand, that severe secondary anemias also may be associated with alchlorhydria, and without doubt would show as high a percentage of this gastric abnormality as the series of various medical cases quoted above, 14.8 per cent. There is reason to think the red, sore, excoriated tongue, as well as the diarrhea sometimes seen in pernicious anemia, is closely associated with lack of gastric acidity.

Blood Picture Suggestive of Pernicious Anemia without Achlorhydria

Case XII.—G. A. G., male, aged fifty-nine. Hemoglobin forty per cent.; red cells 1.8 million; color index 1.1; leucocytes 3,400; polynuclears thirty-seven per cent.; lymphocytes sixty-two per cent.; eosinophiles one per cent. The smear showed the presence of microcytes, megalocytes, poikilocytes, polychromatophilia, and one megaloblast to the one hundred leucocytes. In the gastric contents after the Ewald meal, free hydrochloric acid 5 in forty-five minutes, 23 in sixty minutes, and 34 in seventy-five minutes. Neither the spleen nor the superficial

lymph nodes were enlarged. Four abscessed teeth were reported on the basis of x ray films. Slight hemorrhoids present did not appear to have been the source of blood loss. We felt doubtful of a diagnosis of pernicious anemia on account of the gastric acidity, though transfusion was done and the abscessed teeth extracted. The hemorrhoids also will be removed.

A more typical case of pernicious anemia is the following:

CASE XIII.—C. G. B., male, aged sixty-six. Hemoglobin forty per cent.; red cells 1.8 million; color index 1.1; microcytes, megalocytes, poikilocytes, polychromatophilia, granular degeneration and an average of one megaloblast to the slide; leucocytes 3,400; polynuclears forty-two per cent.; lymphocytes fifty-five per cent.; eosinophiles three per cent. Neither the spleen nor the liver was palpable; no enlargement of superficial lymph nodes. Gastric contents showed no free hydrochloric acid. Röntgen ray studies of the gastrointestinal tract by Dr. A. L. Gray were negative. There were signs of cord degeneration, but pertaining more to the posterior than to the lateral tracts. Though the blood Wassermann reaction was negative, lumbar puncture was advised but declined. Under a single series of two transfusions the general condition remained satisfactory for a period of a year, as represented by a hemoglobin of eighty-five per cent.

BLOOD PICTURE OF SEVERE SECONDARY ANEMIA WITH ACHLORHYDRIA

CASE XIV.—Mrs. A. D. L., aged forty. She had had three miscarriages, the last six months prior to date when first seen. Wassermann and clinical evidence of syphilis were negative. There was no unusual loss of blood. She had two abscessed teeth. Hemoglobin was thirty per cent.; red cells 2.4 million; color index 0.6; leucocytes 4,600; polynuclears seventy-one per cent.; lymphocytes twenty-four per cent.; large mononuclears four per cent.; eosinophiles one per cent. Free hydrochloric acid absent in three specimens taken at intervals of forty-five to seventy-five minutes after Ewald meal. The abscessed teeth were extracted but the condition was attributed also to other depleting causes, including the history of miscarriages. Under treatment with hydrochloric acid, iron and arsenic, her condition became practically normal within a year and has remained satisfactory during the succeeding five years.

XI. SPINAL CORD CHANGES

Evidences of a combined subacute degeneration of the cord affecting the posterior and lateral columns are likely to arise in pernicious anemia, though often late. The upper extremities are most often involved but the lower not infrequently. The neurological signs may precede the development of the characteristic blood picture, but rarely, if ever, do they develop prior to achlorhydria. The cord changes may be progressive in spite of general well being.

CASE XV.—Miss E. S., aged forty-three, April, 1921. Hemoglobin forty-five per cent.; red cells 1.9 million; color index 1.2; leucocytes 3,000; polynuclears sixty-five per cent.; lymphocytes thirty per cent.; large mononuclears four per cent.; eosinophiles one per cent.; free hydrochloric acid absent. Neurological examination negative. She was transfused and sent home, taking hydrochloric acid and arsenic. She returned in June, 1923. From the blood examination alone the diagnosis of pernicious anemia could not have been made. Achlorhydria, however, was still complete and the neurological condition was as described in the following note of Dr. Beverley R. Tucker: "Neurological examination shows knee jerks present and equal; Achilles jerks absent; no Gordon; no ankle or patella clonus; double Babinski; no Oppenheim; muscle power lowered; muscle tone increased; no adiadochocinesia or ataxia; sense of position is poor; no tremor of the fingers, face, tongue or muscles; areas of hyperesthesia, partial loss of postural sense in both lower limbs; is unable to recognize heat in both legs; thighs, trunk, arms, etc., normal; no speech changes; pupils are dilated in size, slightly irregular in shape, react sluggishly to light and promptly to accommodation; slight nystagmus, no diplopia, ptosis or exophthalmos; fundi negative except for pigmented deposit in the right disc; cranial nerves are negative except for slight right facial weakness and possible involvement of the vestibular, intermediate, glossopharyngeal and optic." Vibratory sense was lost in the lower extremities and sacral region; normal in the upper extremities and sternum (Dr. Finley Gayle).

SUMMARY

On the basis of the foregoing analysis of symptoms, the different clinical pictures may now be reconstructed in brief outline.

Chlorosis is a disease of girls and young women, characterized by pallor, menstrual irregularities and digestive disturbances, a distinctly low hemoglobin and low color index, without other marked abnormality of the blood picture, lacking the causal factors of secondary anemia, and usually responsive to the administration of Blaud's mass. As students many of us may have gained the impression that it is a common disease. As a matter of fact it seems to be comparatively rare.

Severe secondary anemia is characterized by a low color index; if there are evidences of the regenerative effort on the part of the bone marrow, it is only in the more profound cases and then not so marked as in the primary types; and an adequate cause is usually demonstrable.

Pernicious or Addisonian anemia usually gives a high color index; the regenerative effort is marked; the red cells are not fragile, their resistance being increased; there is no demonstrable cause of the anemia; free hydrochloric acid is nearly always absent from the gastric contents; cord changes are likely to develop; subcutaneous fat is well preserved, and there is a somewhat characteristic lemon yellow pallor to the skin. There is a tendency to remissions.

Aplastic anemia is usually regarded as a form of pernicious anemia in which there is a steadily falling white and red count with little or no sign of regenerative effort or tendency to remission.

In myelogenous leucemia splenomegaly is a prominent feature, and the excessively high white count, from thirty to several hundred thousand, is chiefly made up by granular cells, with many myelocytes.

In lymphatic leucemia, lymph node enlargement overshadows splenomegaly; leucocytosis is equally as

prominent as in the myeloid form, but the cells are lymphocytes, usually small and mature in the more chronic form, large and immature in the acute form.

Hodgkin's disease, or pseudoleucemia, often has a more distinctive glandular enlargement, especially in the cervical region, than is seen in lymphatic leucemia; the total leucocyte count is not above 30,000, and usually within the normal or near normal range, including the differential count. The anemia is of the secondary type, and an excised lymph node is likely to show a definite pathology.

Splenic anemia offers few positive features, and the diagnosis is arrived at chiefly by exclusion. Except for a secondary type of anemia, the blood picture is essentially normal, barring intercurrent infections. The spleen enlarges early and is often larger than in any other condition, except myeloid leucemia. It is distinctly chronic. There is no demonstrable cause. There is a marked tendency to hemorrhage. Its title to recognition as a disease entity is doubtful. In its most frequent form it is now regarded as an early stage of Banti's disease, enlargement of the liver and ascites representing later developments. In this type resistance of the red cells is usually normal.

Gradually there have been separated off from the group of splenic anemias more or less well defined subvarieties (2), namely, Gaucher's disease, von Jaksch's disease, congenital and acquired hemolytic jaundice.

Only about twenty authentic cases of Gaucher's anemia have been reported. It begins in infancy or childhood and pursues a chronic course, averaging twenty years. The spleen may become larger than in any other disease. It has rarely been diagnosed except at autopsy, where characteristic large, vesicular cells with small eccentric nuclei are found blocking the sinuses of the spleen and lymph nodes or crowded in the capsule of the liver lobules.

Von Jaksch's disease occurs in infancy, one to two years of age, is characterized by splenomegaly, and is usually associated with rickets.

Jaundice, nonobstructive, hemolytic in origin, rare in Banti's disease, is characteristic of the two remaining types. If it is congenital or familial, the patient is likely to seem more jaundiced than sick; in the acquired form the patient is distinctly more anemic and sick than jaundiced (Chaufford). The resistance of the red cells is diminished. There is splenomegaly. The liver is often moderately enlarged.

THERAPY

General reconstructive measures are applicable in all the conditions discussed. The most nutritious and assimilable diet, iron, arsenic, fresh air, and a generally good hygiene are, of course, important. If bleeding is intractable or the clotting time prolonged calcium chloride or serum applied locally or subcutaneously may be used.

In chlorosis the diagnosis should be questioned if the response to iron in the form of Blaud's mass is not reasonably prompt and complete.

The treatment of secondary anemia obviously will vary with the cause. Transfusion as an adjunct should be borne in mind.

In pernicious anemia transfusion holds a place of prime importance. My associate, Dr. Williams, uses whole blood by the syringe method of Linderman, and repeats the process as often as may appear necessary. The reactions seem less severe and the benefit more striking than with the citrate method. Usually from two to three transfusions are made within the first one or two weeks. Within the past three years we have only rarely had to repeat the series of transfusions. Most of the patients are in reasonably good health, though distinctly below normal. Needless to say we do not imagine that any patient is permanently cured, and are conscious of the natural tendency of the disease to remit. Dilute hydrochloric acid is given continuously in an average dose of one drachm three times a day. Neurological symptoms are treated by hydrotherapy, massage and exercise, but without any striking benefit. Hurst and Bell emphasize the importance of eradication of foci of infection about the mouth and elsewhere, believing that the achlorhydria permits pathogenic bacteria to pass into the intestinal tract in viable form. In fact, on this they base their ideas of the etiology of the disease. The obvious importance of relieving the patient of further drain through menorrhagia, bleeding hemorrhoids and the like, need not be emphasized. Splenectomy, I think, is not advocated as much as in the past. Germanium dioxide has not fulfilled its promise.

Röntgen ray therapy or radium, I think, is the most useful palliative measure in the leucemias and in Hodgkin's disease. The choice depends upon the material equipment and personal experience of the operator, with whom must be left the dose, frequency and sites of application. The method is not without acute dangers. It is to be hoped that increased benefit may be had with the high powered machines recently developed. The myeloid form of leucemia appears to be more amenable to ray therapy than the lymphatic type. The same is true of benzol, which has been found effective in reducing the cell count and improving the general condition of leucemic patients. The dose varies from five to twenty or more drops three times a day and should be stopped before the count reaches normal (5). Splenectomy may be advisable following röntgen ray or radium treatment in myeloid leucemia. In Hodgkin's disease salvarsan has been advocated, but has not gained for itself any established place. I have used it without apparent benefit.

In splenic anemia, at least in Banti's disease and the hemolytic jaundice types, splenectomy, done early, has given excellent results.

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The Rationale of Acute Mercuric Chloride Poisoning

*A Simple Method for Its Treatment**

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In approaching the subject of acute mercuric chloride poisoning we are confronted with a mass of apparently contradictory evidence derived from clinical observation and laboratory experiments. For clinical study we have the outstanding results of Lambert and Patterson, and Weiss; on the side of laboratory research we have most prominently before us the studies of MacNider, and Sansum, and the work of Haskell, Carder and Coffindaffer. The difficulty is to harmonize their apparently contradictory conclusions. According to Sansum (1) all efforts to effect a cure by diuresis, when once absorption of the minimum lethal dose of mercuric chloride has taken place, are futile. This he has amply proved by experiments with dogs, experiments so carefully controlled as to be incontrovertible. He tested out all known methods of treatment only to find them unavailing. His conclusion is that only by prevention of absorption can anything be accomplished in cases of mercuric chloride poisoning. In his experiments he used the intravenous method for administration of the mercury. On the other hand, Haskell, Carder and Coffindaffer (2) in experiments also carefully controlled but administering by mouth the lethal dose (proved to be so by controls of untreated animals) found that by forcing large quantities of salt solution parenterally, twenty out of twenty-five dogs were saved.

What then is the explanation of these to all appearance diametrically opposite results? It is here that MacNider's (3) work on the relationship of acidosis to acute mercuric chloride intoxication steps in and reconciles their conflicting views. MacNider believes that the excretion of mercury is not in itself the important factor in the production of nephritis, but that the accompanying acidosis is responsible.

The renal pathology has been shown by MacNider (4), and this has been confirmed by other observers (5), to consist of swelling of the epithelium of the convoluted tubules, followed by necrosis, fatty infiltration of the tubules of the loops of Henle and acute congorgement of the glomerular vessels. The kidney is swollen; the capsule is tense and constricts the bloodvessels. It is manifestly unreasonable to expect the kidney so involved to function normally. Far less will it be able to do the extraordinary work which devolves upon it in acute mercuric chloride poisoning. Burmeister and McNally (6) have, moreover, shown that mercury can be found in the blood of dogs ten minutes after its ingestion. Therefore, we feel that, while efforts should be made to administer antidotes and to remove by mechanical means as much as possible of the drug from the gastrointestinal tract, we shall, in practice, never have the opportunity to establish treatment soon enough after the dose has been taken, to place reliance upon this procedure. We must, therefore, have recourse to other measures if we are to hope for success in controlling this poison.

We believe that the unfavorable results obtained by Sansum after administration of the minimum lethal dose, in spite of his using all known forms of treatment, may be accounted for in two ways:

1. The lethal dose was given intravenously, thus at once establishing an acidosis which caused irreparable damage to the tissues of the body before any mitigating agent could be introduced. It has been shown that the slightest change in the reaction of the blood is incompatible with life and that an increase of the hydrogen ion concentration of the blood to one gram in ten million litres, causes immediate death. Thus, just as it would be expecting too much from diphtheria antitoxin or tetanus antitoxin to effect a cure when administered late in the disease, so it would be expecting too much from alkali to obtain reconstruction of the damaged tissue either in a prolonged or in a very severe case of acidosis. MacNider (7), however, did show that he was able to inhibit the toxic action of uranium nitrate by means of sodium carbonate, provided acidosis was not already established.

2. The kidney, already crippled, was subjected to further injury in being forced to excrete large quantities of water.

We shall find, proceeding from the same premises, an explanation of the favorable results obtained by Haskell, Carder and Coffindaffer (2) who administered the minimum lethal dose of mercuric chloride by mouth, and, by parenteral injection of large quantities of salt solution were able to save twenty out of twenty-five dogs. The reasons for their success were:

1. Because the mercuric chloride was administered orally, the absorption into the blood was more gradual, so that treatment could be instituted before irreparable acidosis was established.

2. The salt solution tended to prevent the mercuric chloride from establishing an acidosis. We believe that their results would have been even better had they used the same quantity of alkali with a smaller volume of fluid.

Mercury is known to be excreted by all the emunctories—by the lower bowel, through urine, saliva, and sweat, but especially by the lower bowel and the kidney which, as has been indicated, would be in no condition to cope with this task. In view of this state of affairs, we feel that our efforts should not be in the direction of pushing the crippled kidney to more than its usual share of work, but that we should endeavor to spare it even to the extent of limiting the fluid intake.

To us, the treatment of acute mercuric chloride cases resolves itself into the following indications:

*Read before County Medical Society, Philadelphia, June 11, 1924.

1. To eliminate by mechanical means as much of the mercury as possible from the gastrointestinal tract.

2. To institute methods to prevent the establishment of a severe acidosis.

3. To spare the kidney.

4. To accomplish these results in the simplest possible manner and with least disturbance to the patient.

The first indication was simple, and the usual means were employed. The patient was put to bed, milk and white of eggs given, and gastric lavage ordered.

The second indication, i. e., protection against an existing or impending acidosis, was less simple, but we came upon a successful solution of this problem by accident. You will recall that in many cases of influenza during the epidemic of 1918 acidosis and nephritis were dominant factors. Upon the suggestion of Dr. W. E. Robertson, we put those patients on twenty grains of potassium citrate and thirty grains of sodium bicarbonate, three times a day for the average adult, and employed simultaneously the other measures usual in combating acidosis, such as Fischer's solution by enteroclysis. This method proved to be successful in the influenza cases, and since they bore a striking resemblance to cases of acute mercuric chloride poisoning, we decided to use the identical method in combating the acidosis set up by mercury.

The third indication, i. e., to spare the kidney, was put into effect by limiting the fluid intake to such quantity only as would suffice to allay the patient's thirst. Salt was excluded, though the diet was not absolutely salt free, and meat and eggs were interdicted; otherwise the patient was encouraged to eat sufficient food to satisfy his appetite. Sufficient magnesium sulphate was given to secure two bowel movements daily. At first, however, owing to the irritation of the mercury, the bowels take care of themselves. Hot packs were applied daily.

SUMMARY OF TREATMENT

1. Patient is put to bed. One quart of milk and the whites of three to four eggs are introduced into the stomach. Gastric lavage.

2. Potas. citrate, gr. xx } t. i. d.
Sod. bicarb., gr. xxx }

3. Fischer's solution, oz. vi, as retention enema twice daily.

4. Hot pack daily.

5. Soft diet, limit salt; no meat, no eggs; milk, oz. viii, every third hour.

6. Water in quantity sufficient only to satisfy thirst.

7. Magnesium sulphate every morning in dose sufficient to secure two stools daily.

The treatment of acute mercuric chloride poisoning, as outlined above, was instituted at the Samaritan Hospital in December, 1918, and has been in use to the present day. Of the fourteen cases treated during that time, one terminated fatally. In this case the treatment could not be applied because the patient had severe gastroenteritis. He had swallowed fifteen seven and a half grain tablets dissolved in water and was brought to the hospital in a state of collapse, vomiting and purging blood. The usual amount of mercuric chloride taken was fifteen grains, although we had one patient who had taken seventy-two grains, and in the fatal case the patient had ingested one hundred and eight grains. Treatment was usually instituted from ten minutes to two hours after ingestion of the poison.

Since this treatment has been inaugurated and proved to be almost invariably successful, our attitude toward these cases has undergone a radical change. A sense of helplessness and fatalism has given way to one of optimism and confidence; and we now feel that, unless a primary gastroenteritis causes a fatal termination, no case is absolutely hopeless.

The author's references will appear in his reprints.

A Case of Gonorrheal Arthritis with Purulent Fluid in the Synovial Space

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The remarkable cures in twenty-seven cases of gonococcal arthritis reported by Ballenger and Elder (1), prompt me to report the following case:

Case.—A naval officer, aged thirty-eight, South American, single, entered the French Hospital October 15, 1923, because of great pain in the right knee joint and inability to use the extremity. Eight years ago he had gonorrheal urethritis, lasting several weeks under medical care. Three days after exposure, five weeks ago, he manifested urethral discharge, painful and frequent urination, for which he received daily thermoelectrical treatment and patent injections for the next thirteen days. He then sailed for this country, the trip lasting fourteen days, during which time a severe acute inflammation of the right knee gradually developed. For the relief of pain the doctor on board applied "hot applications" to the knee.

Physical examination.—The patient was muscular and well developed. The right leg was held semiflexed, the knee abducted, swollen, red, hot, tender on pressure or motion. By rectum the prostate and vesicles were not enlarged or painful.

Laboratory findings.—White blood cells 8,000; lymphocytes, 12 per cent., small mononuclears 5 per cent., polynuclears 83 per cent. Two cultures of the

aspirated synovial fluid on two occasions were full of pus but sterile. Expressed secretions from the prostate and vesicles contained considerable pus and several colonies of intracellular and extracellular diplococci. The urine was negative except for a few pus cells. Blood Wassermann was negative.

Course and treatment.—October 19th, four days after admission, an accumulation of fluid in the synovial space became evident by marked fluctuation, increased swelling and pain. From now on aspiration and injection of the synovial fluid, according to the procedure of Ballenger and Elder, were begun.

October 26th, the synovial fluid having changed from yellow to dark green, the pain and swelling unrelieved, incision and drainage of the synovial space were considered, though decided against for further observation.

October 28th, after the fourth injection, relief from pain and swelling was appreciable. Thereafter gradual improvement continued. The number of injections was six; the dose of each injection averaged forty-three cubic centimetres, the injections exciting no reaction. The temperature ranged from 99° to 101° F., from time of admission to November 9th.

November 6th, however, the patient was allowed out of bed and walked with the aid of crutches. Massage of the prostate and vesicles, followed by bladder and urethral irrigation, was begun and continued twice a week till the patient was discharged cured.

November 14th the patient discarded the crutches for a cane.

November 18th the patient was discharged from the hospital and resumed his daily work, though the knee still presented considerable induration, while motion in the joint was limited to forty degrees. Slight pain on motion.

February 15th, four months following admission to the hospital, the patient was discharged cured, with some induration still present in the soft parts surrounding the joint.

COMMENT

In this case, typically one of acute gonorrheal arthritis, the patient was in excellent general condition and being treated as outlined above should have been relieved and cured as promptly as were the patients in the twenty-seven cases of Ballenger and Elder, some of whom were reported to have been relieved in twenty-four hours, while nearly all the cases were said to be cured in about two weeks' time.

Since almost all cases of gonorrheal arthritis follow prostatitis and vesiculitis, it is rather difficult to explain, on grounds of immunity or virulence, the great difference in the response to treatment between the cases referred to and the one described above. It must be emphasized, however, that in the case under discussion the patient was greatly benefitted by the synovial fluid injections. Had the synovial space been incised and drained, the result would probably have been at least partial ankylosis of the knee joint.

As exercise for the joint involved, voluntary motion sufficed in this case.

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Acute Empyema Treated by the Combined Closed and Open Method*

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In reviewing the literature of empyema since the influenza epidemic of 1918 it is interesting to note the many variations in treatment. Hardly any two surgeons seem to use the same method throughout. Many of the articles are written avowedly in the interest of some new technic or appliance, some of which have marked a real improvement in the handling of these cases; others have done little more than to increase the already voluminous literature on the subject. This shows that the results have not been ideal, but the continual striving at least redounds to the glory of the profession.

Before the epidemic of 1918 practically all cases of frank empyema were treated by either rib resection of intercostal thoracotomy, and the mortality ranging around twenty-eight per cent. was accepted as more or less inevitable.

During the war, among the soldiers in camp, the mortality rose to between fifty and seventy-five per cent. in some series. This was hardly considered good enough, and those in charge of the medical affairs of the army began to take inventory. An Empyema Commission was formed by which Dr. Allen B. Kanavel took charge. At that time there were 980 cases of empyema in the Army Hospital. The difference in the mortality per cent. between this and ordinary times was due to the difference in the kind of organism operating. Empyema occurring in civil life was generally secondary to pneumonia and the organism found was the pneumococcus. During the epidemic, empyema more frequently accompanied bronchopneumonia or measles, and the prevailing organism was streptococcus and less frequently staphylococcus. We are not concerned here with the tubercle bacillus except as a complication.

It is important to understand the modus operandi of these different organisms. Empyema as a complication of pneumonia frequently is not demonstrable until after the acute stage of the former disease is past. The temperature may drop to normal and remain so or show remissions for several days. The involvement of the pleura may be due to rupture

*Reported before the Medical Society of the District of Columbia, April 16, 1924.

of a subvisceral abscess, as given by Ransohoff as the most frequent cause of empyema. On the other hand, when streptococcus or staphylococcus is the offending organism, the involvement of the pleura is early and shares in the general pulmonary infection. The endocardium and peritoneum may also

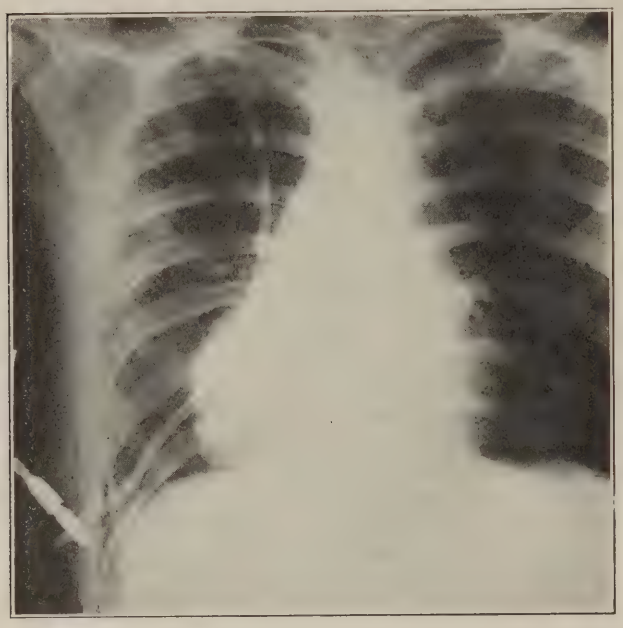

FIG. 1.—Case III, J. C. Shows expansion of lung while negative pressure in the pleural cavity was maintained. The tube is inserted further than necessary.

be involved. If we accept the theory of the subvisceral abscess gradually extending to the periphery and finally breaking into the pleural cavity, we can see why empyema following pneumonia may be localized or even interlobular. The parietal and visceral pleura are prepared by the slowly extending infection and have a chance to wall off the invasion much as the peritoneum does in spreading infection from an appendix. Compared with this the infection of the pleura by streptococcus or staphylococcus is like a blow between the eyes. No chance is given the pleura to wall off the invasion and the infection is of such a nature that few or no adhesions are formed until the third week, granting that the patient lives that long.

Eggers reports two series of cases showing the difference in virulence of the streptococcus and pneumococcus. In the first there were sixteen cases of streptococcal origin with a mortality of sixty-two per cent., and in the second there were fifty-three cases with a mortality of 5.5 per cent. Again, in the first series there were fifty-four cases of pneumococcal origin with a mortality of seventeen per cent., and in the second seventeen cases with a mortality of 5.8 per cent. In the streptococcal cases the hemolytic type greatly predominated. It would seem from this that the mortality from streptococcus may vary greatly, i. e., from sixty-two per cent. in the fulminating cases associated with measles, to 5.6 per cent. He reports six autopsies, all of which showed infection of the endocardium, pericardium, or peritoneum.

Some interesting experiments have been done by Graham and Bell on dogs showing the effect of an open pneumothorax. They demonstrated that where the mediastinum is not anchored by adhesions, given an open pneumothorax on one side, it will deviate to the other side and so compress the lung of the socalled unaffected side that the pressure on the two sides will be equalized. As Kanavel puts it: "If we speak of the affected side and the sound side we are deceiving ourselves, for the compression of the two lungs is approximately equal, and the conception of one lung working without let or hindrance in spite of an extensive pnuemothorax on the opposite side, is erroneous." The actual difference in pressure on the open and closed sides will be less than one cm. of water. In other words, if positive air pressure is made in one pleural chamber equal to ten cm. of water, the pressure in the other chamber will be between nine cm. and 9.5 cm.

They also emphasized the importance of the relation between the size of the opening in the chest and the tracheal inlet and showed that when the former approached the latter, when the vital capacity was greatly reduced, the competition between the two may become so keen as to endanger the life of the patient. Air will enter through the portal of least resistance and if the chest wound is large, so little air will enter the lungs as dangerously to limit the vital capacity, in spite of the increase in rate and amplitude of respiration.

A homely but applicable analogy can be drawn between this condition and the endeavor to suck water from a glass with one straw on the inside and the other on the outside. If the lumen of the two straws are equal, little or no water will be sucked up, but if the one on the outside is smaller, the

FIG. 2.—Case III, J. C. Shows lung contracted due to leakage of air after multiple incision had been made to drain subfascial abscess

amount obtained will be in proportion to the difference in their calibers. We all have seen the socalled sucking wound, caused by the penetration of the chest by large shell fragments, and the distressing dyspnea and cyanosis that resulted. Simply suturing the skin over these wounds, or, where this was im

possible, slapping a large wet dressing over them, gave almost immediate relief.

It might be well to pause here for a moment to inquire into the reason why a patient, in the early stages of empyema when the lung and mediastinum are not stabilized by adhesion, or even fairly late

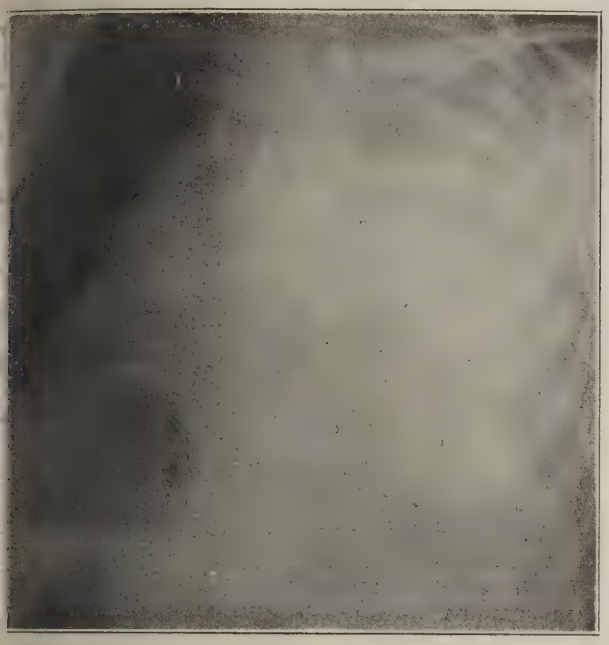

Fig. 3.—Case VII, E. P. Massive empyema of the right pleural cavity.

when the infection is due to streptococcus and few or no adhesions are formed during the first two weeks, should stand so poorly even a comparatively small opening into the pleural cavity.

Hutchinson in 1846 by the use of a spirometer showed that the vital capacity, i. e., the greatest amount of air that can be expired after the deepest possible inspiration, in the average man is about 4,500 c. c. and that the "tidal air," or what we actually use in breathing, is 500 c. c. The difference between these two is made up by the complementary and supplementary air. Lately it has been shown that this estimate of the vital capacity is too low and that a man six feet tall will have a vital capacity of 4,800 c. c. It is not hard to understand then that the nearer the vital capacity approaches the tidal air the smaller will be the margin of safety, and if at any time it becomes less, the result will be asphyxiation and death. Now when we realize that the lungs have no inherent power to expand but admit air only because the respiratory muscles of the chest and the diaphragm cause the chest to expand and produce a partial vacuum within the pleural cavities, it is easy to see why this relative vacuum is necessary.

Graham has shown that the amount of dyspnea that follows an open pneumothorax is, under normal conditions, in proportion to the size of the opening in the chest, and he has worked out a formula which would indicate, when the vital capacity had been ascertained, the size of the opening in the chest that a given patient would stand.

A rough estimate of the vital capacity can be obtained by the observation of three factors:

1. Rate of respiration.
2. Amplitude.
3. Condition of the circulation as shown in the extremities.

It will be obvious that if the respirations are around thirty or forty a minute and the amplitude is as great as possible, and still there is cyanosis and coldness of the extremities, then the vital capacity and tidal air are dangerously near the same and that any further interference, such as even a small open pneumothorax, may be enough to push the patient over the brink.

Taking 4,800 c. c. as the normal vital capacity for a man, Graham found that an opening 10.4 square inches could be made in the chest, as long as the respiratory muscles could maintain a maximum effort without producing serious results.

This theory is borne out in practice by the fact that large openings have been made in the chest over short periods of time, either by intent, as at time of operation, or as the result of large shell fragment wounds. On the other hand, he found that a patient, who had an empyema and had a vital capacity of 1,600 c. c. and who should have stood an opening in the chest of 3.3 square inches, was made markedly dyspneic by an opening of 2.1 square inches. This would indicate that under pathological condition, rather less than the maximum opening can be made with safety.

TREATMENT

When fluid in the pleural cavity is suspected or assured by physical examination or by x ray, aspiration should be done under local anesthesia where indicated (usually in the seventh or eighth interspace in posterior axillary line) and the character ascer-

Fig. 4.—Case VII, E. P. The same patient two weeks later.

tained. If clear fluid is withdrawn as much of the fluid should be removed as possible without causing too much inconvenience to the patient, such as pain,

coughing, and dyspnea. Clear, strawcolored fluid in a patient running a temperature usually means a tuberculous condition. To make sure of this diagnosis some of the fluid should be injected into the peritoneal cavity of a guineapig. If cloudy or slightly cloudy fluid is withdrawn, a smear should be made and the fluid cultured to ascertain the exciting organism. This at most only means a delay of from twenty-four to forty-eight hours, and in the meanwhile the patient is relieved of the embarrassing presence of the fluid, and the lung is allowed to expand somewhat and further stabilize itself by adhesions. Where the infection is of streptococcal or staphylococcal origin one of two courses is open, i. e., repeated aspiration or drainage by the closed method. If the culture shows pure pneumococcus and frank pus is present, the latter procedure may be carried out or intercostal drainage or rib resection resorted to.

Bülau in 1890 described a closed method of draining the pleural cavity which seems to be the basis of the socalled Mozingo method of the present day. The former advocated the insertion of a rubber catheter through a cannula, which had been introduced into the pleural cavity through an intercostal space. The cannula is then removed and the catheter left in place. A connection is then made between the catheter and a rubber tube which is immersed in a bottle containing antiseptic fluid and so placed as to create syphon drainage. Mozingo omits this last step and aspirates through the catheter by using as asepto or Dakin bulb syringe. When all the fluid and air have been removed the bulb remains collapsed, showing that there is a vacuum in the pleural cavity. By this method it is possible to lift water eight feet in a six mm. tube, and by clamping the catheter a vacuum can be maintained for a number of hours.

A great number of devices have been used to produce a constant vacuum, but the one mentioned above has proved satisfactory in my hands and has the great advantage of being simple and easy of construction. With a little instruction a nurse can aspirate the fluid that has accumulated from one dressing to another (usually at three hour intervals), and on one occasion I allowed the patient to go to his home in the country with the tube in place and an intelligent member of the family carried out the treatment. The one hitch in the procedure seems to be that in a number of cases there is leakage of air around the tube beginning any time after the first three or four days, which prevents or limits the negative pressure within the pleural cavity. This is obviated in some instances by pressing a piece of rubber dam down and fitting it snugly about the catheter and glueing it to the chest wall with St. Claire glue. Seeing the need of a more efficient means of preventing leakage I had made a catheter encircled by a pneumatic jacket. When after a few days, the result of infection and retraction of the tissues along the tract, there is leakage of air, the original tube is withdrawn and the pneumatic jacket tube inserted. If there is any difficulty in inserting the latter, the distal end may be closed temporarily by tying the tip with oo plain catgut and a probe placed within the lumen. This will give added stability to the tube and allow gentle pressure to be made. The catgut will soon be absorbed, reestablishing the lumen and in the meanwhile aspiration can be carried out through the fenestrations that have been previously made on the side. Recently I have found in the literature a description and picture of almost identically the same device as used by Morelli of Bologna. He, however, does not limit their use to a small opening made by a trocar, but has three sizes, so that one or the other can be fitted in after intercostal incision or rib resection.

The most frequent objection to the closed method in treating empyema is that efficient drainage cannot be maintained. This has not so far been my experience. By the use of Dakin's solution for irrigation thick pus and inspissated particles of fibrin can be disintegrated and liquified so as to pass through the lumen of a No. 14 French catheter. If dense fibrinous adhesions about the lung do not loosen from being bathed for fifteen minutes every three hours in the usual 0.5 per cent. solution, Kanavel recommends the use of a two per cent. solution. If the patient fails to improve as a result of this treatment, it generally means that there is pus elsewhere that is not reached by the irrigation fluid, either a second pocket in the pleural cavity, a lung abscess endocarditis, or similar condiiton. In this case even a larger opening at the same site would not better the condition.

At the end of from ten days to two weeks the closed method may be discontinued. By this time the lung has generally expanded so that there is only a small area about the tube that has still to fill out and strong adhesions have formed which prevent the lung from contracting when a little air enters through the tube. All that is needed to convert the closed method into the open is to shorten the tube so that it extends only through the thoracic wall and allow about an inch to project on the outside. A safety pin is used to hold it in place. Mozingo advises injecting ten per cent. formaldehyde in glycerine into the remaining cavity after the tube is removed, but this has been known to become encysted and later give trouble. The criterion as to when to discontinue the closed method is the measurement of the size of the cavity. If the latter holds one or less Dakin syringe (capacity one ounce) full of air, it is quite safe to assume that the rest of the cavity will close, if a vent for any further secretion is provided by the open tube. Irrigation by Dakin's solution may be continued as before though not so often—usually twice daily will suffice.

Of the fifteen patients in this series all but one were treated by the closed method, either as a primary procedure or throughout their illness. The exception was made in this instance (Case IV) because of the preference for the intercostal method of the doctor for whom I operated, and because the operation was done out of town. It is interesting to note that in spite of the fact that a double tube of half inch lumen was used, the drainage at one time was insufficient. It is this result that brings forth the objection to the closed method by those who advocate what they are pleased to call adequate drainage and illustrate that the size and number of the tubes inserted into the empyema cavity do not necessarily insure drainage, but that a great deal depends upon irrigation.

In three other cases the closed method was used in the beginning and intercostal drainage resorted to later. In one of these (Case III) it was impossible to maintain a vamuum, due to the fact that air filtered in through openings made in the patient's back to drain multiple abscesses. About two weeks after the first operation Dr. Mitchell inserted two large tubes through an intercostal opening. X ray plates 1 and 2 (Case III) show very distinctly the difference between negative and positive pressure. In Fig. 1 the lung is expanded taking up nearly the entire cavity and in Fig. 2 it is contracted, leaving a tremendous dead space.

Case	Name	Age	Sex	Etiology	Organism	Method of Treatment	Complication	Results
1.	J. A. R.	22	M.	Pneumonia	Streptococcus	Closed	T. B. in sputum	Cured
2.	J. L. R.	27	M.	Unknown	Culture neg.	Closed	Bronchial fistula Localized abscess	Cured
3.	J. C.	14	M.	Pneumonia	Hem. strept. Pneumococcus	Closed intercostal drainage	Subfacial abscesses	Cured
4.	W. C.	30	F.	Pneumonia	Pneumococcus	Intercostal drainage	None	Cured
5.	E. DuP.	50	F.	Pneumonia	No culture	Closed intercostal drainage	Bronchial fistula	Cured
6.	M. R.	25	F.	Pneumonia	Pneumococcus	Mozingo	Five months' pregnancy	Cured
7.	E. P.	6	M.	Pneumonia	Pneumococcus Staphylococcus	Aspiration and Mozingo	Single pneumothorax	Cured
8.	M. D.	13	F.	Indefinite	Pneumococcus Strept. hemo.	Closed and open	Double pneumothorax Middle ear	Cured
9.	J. S.	10½	M.	Pneumonia	Staphylococcus	Closed	Measles	Cured
10.	A. S.	11	F.	Pneumonia	Sterile culture	Closed	None	Cured
11.	B. H.	3	M.	Pneumonia	No culture	Closed	Middle ear	Cured
12.	B. D'A.	28 mo.	F.	Pneumonia	No culture	Closed	None	Cured
13.	H. W.	5	M.	Pneumonia	Strept. hemo. Diplococcus	Closed	None	Cured
14.	A. B.	18	M.	Pneumonia	No culture	Closed	None	Cured
15.	A. M.	3	F.	Pneumonia	Streptococcus	Closed and Intercostal drainage	None	Cured

In Case V the patient was operated upon four times. She began and ended with the closed method, but between these two operations which were done nearly a year apart, she had an open intercostal drainage and rib resection elsewhere. In Case XV the tube came out by mistake on about the tenth day, and when it was detected it was impossible to reinsert through the original opening. It was thought safer to locate the old tract through a skin incision than blindly by means of a trocar.

On two occasions the Dakin solution had to be discontinued as an irrigation because of hemorrhage or rise of temperature. It was found that after most of the fibrinous material had been cut away the Dakin solution acted on the tissues, causing irritation and bleeding. In one case there was also a marked rise in temperature which subsided immediately after normal salt solution was substituted. Leakage of air around the tube can usually be prevented by making the incision in the skin, where the trocar is to be inserted, a little smaller than the diameter of the trocar. By failing to observe this minor point we have been embarrassed by leakage around the tube which made it impossible to maintain a vacuum.

I want to emphasize the importance of leaving in the rubber tube after the closed method has been discontinued. Chronologically the routine is as follows: The closed method is kept up until the cavity holds less than two ounces of air, usually about the end of the second week, the tube is then shortened, left open and stabilized by a safety pin (Case XIV). Irrigations are now done once or twice in twenty-four hours and when no solution can be made to enter and no air is expelled when the patient coughs, the tube is removed entirely. The last stage may last another ten days or two weeks, but it is quite feasible during this period to handle the patient at his home. By using the combined closed and open method of drainage it is almost impossible for the external wound to heal leaving a circumscribed abscess.

1015 Sixteenth Street.

Unusually High Blood Sugar Content in a Case of Diabetes

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An emaciated man, of about forty-five years of age, was admitted to the Germantown Hospital in the afternoon. He was in a semicomatous state, talked incoherently and at random, and was difficult to arouse. His temperature was 95°, his feet and other extremities were cold. An odor of acetone was detected on his breath. Upon catheterization his urine was found to be loaded with sugar, acetone and diacetic acid. A blood sugar analysis showed that it contained an unprecedented amount of glucose, the reading of the Dubosque calorimeter done by artificial light and a ground glass mirror, was over 1700 milligrams to the 100 c.c. of blood, by the Folin Wu method.

Insulin was at once administered by vein. The first dose was forty units; forty-five minutes later fifty additional units were given by the same route. His condition being desperate, camphor, digitalis, atropine and caffeine were administered and artificial heat applied. In one hour after the first dose of

insulin, the blood sugar content had fallen to 842, due to the combined effect of the ninety units of insulin. However, he sank slowly and in another hour he was dead. Fifty units more of insulin had been given in the meantime.

When admitted, his wife, a woman of low intelligence, said that he had been in a semicoma since the midnight previous to admission. His attending physician thought that he was suffering from an intestinal obstruction as he complained of much pain in the upper half of the abdomen which was rigid. A simple enema afforded an easy evacuation of a clay colored stool. No autopsy was performed.

This case, incompletely reported, for the autopsy data were not secured, is presented because of the very high blood sugar content and because insulin in large doses given to a man all but moribund, with a low temperature, seemed to be futile to revive one so long in coma or semicoma. Previous to his acute illness the patient had not exhibited the common symptoms of diabetes. The blood sugar estimation was done by a competent pathologist who has had long experience in such work.

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Modern Cataract Operations

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New York

The method of removal of a cataract from the eye of a patient who is over fifty years of age, has made decided advancement within the past few years. Many eye surgeons acknowledge the advantage of the newer technic but assert that having mastered the older method they are unwilling to make a change. In the opinion, however, of a greatly increasing number of eye surgeons, the most desirable method for the extraction of senile cataracts is one whereby the lens is removed within its capsule. The chief objection raised is the fear that the vitreous may be lost.

The technic and the apparatus used have been greatly improved, and a sufficiently large number of operations performed to prove that vitreous loss is not to be feared, and is most always the result of neglect of a part of the technic.

The lens within the eye, averaging ten millimetres in diameter, is enclosed within and supported by a very delicate and friable capsule. Around the periphery is a series of fine radiating elastic fibres, called the zonule of Zinn. This is attached to the ciliary body. Tension on these fibres by the contraction of the ciliary muscles produces an alteration in the shape of the lens, and thereby the act of accommodation. The zonule is composed of elastic fibres which are comparatively tough in youth, but as age advances, these become exceedingly soft and lose their tensile strength and are easily broken. Ordinarily the lens within the capsule is adherent to its inner surface, but after a cataract is formed, and it becomes harder and harder, the lens loses its adherence to the capsule. When this has taken place completely, and the lens is quite hard and separated from its capsule, the cataract is said to be mature, or "ripe" and ready for operation. This has nothing to do with the age of the individual. Many very old people have waited year after year for this ripening to take place, and are still waiting. It may occur in a few months or it may take several years, and meanwhile the patient is blind.

This hardening of the lens and separation of the capsule is essential for the proper performance of the older capsulotomy operation. By this method, an opening is made in the anterior surface of the capsule, and the hardened lens pops out into the anterior chamber, and is expressed by pressure on the limbus. Should the lens substance not be quite hard, it is necessary to manipulate the eye considerably to eliminate the broken down substance. Even at best it is impossible by this method to remove all of the lens fragments, or the capsule, which may be as opaque as the lens itself. This necessitates a further period of waiting and the patient's returning to the hospital for a second and even a third operation in an endeavor to rid the eye of the residue which remained after the first operation.

We all must admit that an operation which will remove the entire offending mass at one time and have a clear pathway for the rays of light to reach the retina is the one to be performed, providing the eye is uninjured.

The intracapsular operation was devised to do away with the long period of waiting for hardening of the lens to take place, and the violent irritation, and occasional loss of an eye, and the repeated operations necessary which occur as a result of leaving lens matter and capsule behind. Not infrequently this has been the direct cause of the loss not only of eyesight but also of the eye itself.

The majority of ophthalmologists are disinclined to remove the capsule and lens at one time for fear that the vitreous will be lost. The vitreous is a semifluid substance supported by a vast network of fine fibres and held in position by the delicate hyaloid membrane which covers the anterior surface. The lens rests in a small depression on its surface called the patellar fossa.

Loss of vitreous is occasioned by undue pressure on the eyeball. Pressure may be produced by the surgeon while operating, or by the patient by contracting the eye muscles during or following the operation. These may both be prevented. The fundamental idea of the intracapsular operation is simply the grasping of the capsule and lens, and by exerting gentle traction rupturing the brittle zonule fibres, without any pressure being exerted by the operator or the patient on the eyeball.

When the idea was first conceived, numerous instruments were devised for grasping the capsule and thus exerting traction. They were all failures, due to the friability of the capsule, which ruptured and thus transformed the operation into one similar to the linear extraction operation as is employed for soft cataracts.

Colonel Smith, in India, next devised the Smith-Indian operation, which is an effort to remove the lens and capsule without exerting traction on it, but by dislocating the lens with pressure and thus complete the operation at one time. It seems that the natives of India are fatalists, and they would give the surgeon one chance to operate, whether it be an iridectomy or cataract extraction. Afterwards if vision is not improved, they could not be prevailed upon to return again, as they felt confident that their vision never could be restored. Under such circumstances, the loss by the Smith operation was not greater than it would be by the older method if the surgeon tried to do everything at one sitting.

It has been found that few surgeons possess the ability to acquire the technic of the Smith-Indian operation, or to judge correctly the amount of pressure required to dislocate the lens. The dividing line between too much pressure and too little pressure lies at the point where a hernia of the vitreous might be produced. Therefore, this operation has not met with success in this country, and is rarely used.

Instruments have been devised to pass behind the lens, hugging its posterior surface, and thus scoop it out of its bed. These have been moderately successful but have a limited field.

It remained for Dr. Barraquer, of Barcelona, Spain, to devise a method of grasping the capsule, and hold it firmly, without rupturing. This he did by negative air pressure; in other words, by the production of a gradually increasing vacuum, the anterior lens surface would mould into a vacuum suction tip, and there be held securely by a steady even pressure, while the operator exerted traction. This ruptured the zonule fibres, and the lens and capsule, which is the cataract, could then be removed.

Dr. Barraquer came to America to demonstrate his method, and operated a number of times successfully. In a few cases it was found after the bandage had been removed, that there was a loss of vitreous. This has been the cause of some men discrediting the Barraquer method. It really was not due to a fault in the principle of this operation, but to the fact that the patient squeezed his eyelids, after they were bandaged, and is a part of the procedure which has since been corrected by our surgeons by deep injections of novocaine, and the performance of a canthotomy as part of the technic.

I have spent a considerable amount of time with the Doctors Green of San Francisco acquiring the method as practised by them. They have been more than a year with Colonel Smith in India, and a long period of time with Dr. Barraquer in Spain, and have ingeniously combined the two methods, using a slight amount of traction, together with a slight amount of pressure, and thus have made the intracapsular operation a success. They have also greatly improved the instruments used, and the operative technic, so that the percentage of loss has been reduced to a minimum and probably operate in as many cases of cataract as any one in America.

Now it is no longer necessary for a patient to sit around year after year half blind waiting for ripening to take place as is commonly believed, but the cataract can be removed as soon as the person is unable to see, as immature cataracts present no barrier to an operator who has acquired the technic of this suction method.

Of course all kinds of cataracts cannot be removed by the intracapsular method. Cases of congenital cataract, or of a dislocated cataract lens, Morgagnian cataracts, or traumatic cataracts in patients under sixty years of age are decidedly not suitable cases.

Not until the patient has passed middle life, is the zonule sufficiently friable to be ruptured by traction, without damage to the ciliary body. Morgagnian cataracts, where the lens matter has become liquefied, and the nucleus has settled to the lower portion of its capsule cannot be removed by this method. The contraindications of the intracapsular method are definite and rather infrequently encountered, and the number will be diminished as our technic improves.

The oil pump devised by Dr. Barraquer could not be depended upon to deliver just the right amount of vacuum at all times. The oil might become heavy on account of changes of temperature or a variance in the viscosity of the oil itself. Consequently the suction was not sufficient to hold the lens. Or the pump might exert too great an amount of negative pressure and thus rupture the capsule. Dr. Barraquer lays great stress on the effect of the constantly recurring strokes of the pump as an aid to the rupturing of the zonule. As a matter of fact, until the strokes have ceased, as they do as soon as the suction tip grasps the capsule, there is no pull at all on the zonule. In other words, when the suction has become of sufficient strength to take hold, the perceptible vibrations have ceased.

The oil pump has been replaced by one which uses mercury instead of oil. A great deal of time and effort have been spent in devising a pump which would produce a gradually increasing negative pressure, until the vacuum equalled twenty-nine inches of mercury, and hold this pressure constant, no more and no less, under all conditions.

In the Barraquer method, the valve controlling the suction is placed in the suction tip. This was found to be rather clumsy, and necessitated a shifting of the fingers which counted against a perfect operation. The shape of the tip has been changed, and the valve removed from it. In its place a foot controlled valve is used, leaving the suction tip unencumbered.

The model of the first suction tip, or vacuum forceps as it might be called, was a silver lead pencil, to which a moulded tip was added. Its sole purpose is to grasp the capsule without tearing, and hold it firmly. There is absolutely no sucking up of the lens substance into the tip and tube as one might suppose. A portion of the anterior capsule simply moulds into the tip in a gradual manner, conforming to the interior of the suction tip, and is there held securely and intact.

The lids are held by a specially devised retractor, which is applied only to the upper lid. The lower lid

is held by a finger of the same hand which holds the retractor, and the assistant is thus enabled to remove the retractor instantly, if necessary.

The deep injection is made by passing the needle through the skin and along the floor of the orbital cavity, and three c. c. of a two per cent. solution of novocaine with suprarenin (especially prepared), injected beneath and behind the eyeball.

An element of success in this operation consists in eliminating all excitement and nervousness on the part of the patient. This is obtained by a very careful preparation, and especially keeping the patient well under the influence of sedatives.

It is perhaps unnecessary to describe all the intricate details of the operation itself, as it should be performed only by a surgeon who is especially prepared and has been provided with all the necessary apparatus. However, when performed by those surgeons who have made a special study of this combined method, and who follow the prescribed technic to its minutest details, the results are equally as successful, and often far surpass all other methods, and I fully believe that the operation for the removal of cataracts by suction will be the operation of choice in the future.

300 Park Avenue.

The Advantages of the Stylet Used with the Rehfuss Tube

Suggested Modifications

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In the course of my experience with the many duodenal tubes on the market, I have come to the conclusion that the use of a stylet in the process of getting the tube into the stomach results both in saving time and in reducing the patient's discomfort to a minimum. I have found this to be true, irrespective of what particular tube may be favored by the practitioner, but for my own part, I have secured my best results when using the stylet in conjunction with the Rehfuss tube. The latter is, on the whole, admirably adapted to its functions because of its well designed capsule, which permits the aspiration of a composite specimen through its spacious fenestrations and also enters the duodenum the more readily because of its oliveshaped tip.

ADVANTAGES OF STYLET

The advantages gained by the use of a stylet arise from the simplification of the process of getting the tube *in situ*. Left to his own initiative as, perforce, he must be when no stylet is used, the average patient undertakes this distasteful task with great reluctance and succeeds only after repeated effort. The flexibility of the tube limits the swallowing to about a centimetre of tube with each deglutition, thereby prolonging the annoying procedure. Indeed I have found that in many instances hypersensitive patients actually suffer considerable nervous distress from their efforts and some even dread the prospect of a repetition.

With the use of a suitable stylet, the patient is relatively passive. The stylet is adjusted into the tube, which is then inserted into the throat of the patient and, with firm pressure of thumb and forefinger upon the tubular walls, the tube is pushed gently downward into the stomach. The stylet is then withdrawn. The time the whole process ordinarily consumes is but a matter of seconds.

The stylet I have found most suitable is a modification of that used with the Jutte tube. Its length is about eighty-five cm., that is, just enough to reach into, but not beyond, the shank of the capsule. It is finished in a knob at its distal end to prevent piercing the tube, and in a loop at the proximal end for the convenient insertion of the finger to facilitate withdrawal of the stylet and also to prevent extrusion of the distal end through the fenestrations of the capsule.

PRINCIPLES OF OLD DUODENAL TUBES

Most of the duodenal tubes on the market make a virtue of the intentional weighting of their capsules, on the theory that they thereby gravitate more rapidly to the duodenum. This is undoubtedly true respecting the course from the pharynx to the stomach; but from there to the duodenum, I believe the extra weight is of no advantage whatever, and may prove an actual obstacle in case of weak peristalsis.

For example, in a stomach which is of the subtonic or atonic type with a sluggish peristalsis, a weighty sinker may prove too much to be carried by a weak wave along the lesser curvature, in which case, most naturally, it would seek the lower pole and depend there. Indeed, the Jutte tube, which bears the lightest and smallest capsule of all, effects its entrance into the duodenum more rapidly than the Rehfuss or any other tube; but, unfortunately, it is deficient in its effectiveness in aspiration. Of course, for passage through the esophagus, the stylet does away with the need for a weighted capsule.

A slight modification of the capsule borne by the Rehfuss tube, by which it would be adapted more thoroughly to the use of a stylet, would make possible a somewhat more mechanical routine in getting the tube into position. The inner diameter of the shank may be widened somewhat to afford passage of the stylet through it, the knob of which should be of sufficient diameter to prevent extrusion through the fenestrations. The stylet would be sufficiently lengthened to permit it to rest against the inner surface of the capsule. The tube could thereby be brought into the stomach by the simple process of pushing it down with the stylet.

38 West Seventy-sixth Street.

Practical Therapeutics

ANILINE DYES IN THE TREATMENT OF INFECTIONS

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For the past three years I have been using aniline dyes locally, intravenously, and by a special intracolonic method (enterocylsis). To date, while much has been written regarding the use of aniline dyes, little has been said about reactions, complications, and contraindications. Hence it is the purpose of this paper to go into detail regarding these important and hitherto unconsidered questions.

From the excellent reports on the use of mercurochrome and gentian violet in septicemias by Hugh H. Young (1), Young and Hill (2), and on gentian violet by Smith and Casparis (3), and similar experiences of mine with neutral acriflavine, it seems as yet of small importance, at least with gram positive organisms, which of these dyes is used—the action of each being approximately the same. In time we shall probably find reasons for differentiation.

Churchman (4) by his laboratory experiments proved (as has also been shown clinically) that gentian violet and neutral acriflavine are bacteriostatic. Churchman (5) also showed that gram negative bacteria continue to grow on agar after exposure to gentian violet, gram positive bacteria die under similar exposure (normal selective bacteriostasis). Acid fuchsin was found to have the opposite effect in each case (reverse selective bacteriostasis). Neutral acriflavine in the laboratory was found to have the same power as acid fuchsin, but clinically, when given intravenously, the action of neutral acriflavine resembles also that of gentian violet. When used locally, however, the laboratory and clinical results coincide. A mixture of gentian violet and neutral acriflavine (acriviolet) possesses bacteriostatic powers against both gram negative and gram positive bacteria, the mixture being stronger in bacteriostatic power than either dye used separately. It does not follow that either dye individually cannot kill certain strains of both varieties of organisms. Clinically (if not actually) the staphylococcus, streptococcus, bacillus pertussis, pneumococcus and other bacteria are killed or inhibited by the one dye. The gram negative gonococcus is always resistant and some strains are evidently totally immune to neutral acriflavine.

Churchman (6) pointed out that a dye heated to 35° C. may have no bacteriostatic properties but this heated to 50° C. becomes an efficient bactericide. Clinical advantage may be taken of this phenomenon (the reason for which is not fully understood) by seeing that our solution for intravenous use is heated slightly above the normal temperature of the blood, i. e., from 105-108° F.

As most of the experimental work done by me is confined to the use of neutral acriflavine, conclusions are based on treatment with this dye. In a number of cases a new dye, acriviolet (Churchman), was used.

The conclusions arrived at are based upon a series of 122 cases (ninety-two medical and thirty surgical) although the medical cases only will be discussed in this paper.

In each adult patient, unless otherwise stated, the dose of neutral acriflavine was fifty c.c. of a half per cent. solution given intravenously. Doses for children were smaller, in proportion to age and size, the strength of the solution being 0.5 per cent. and the treatment by the intracolonic method.

It would be impossible on account of lack of space to give complete histories of each of the cases treated, but details will be given of unusual and almost miraculous cures in such conditions as Ludwig's angina, pertussis, mumps, bronchopneumonia and others.

Treatment of acute conditions to be reported showed satisfactory results. Chronic conditions were not so tractable.

1. Acute bronchitis (eight cases), two of which were postoperative, violent and distressing in character, responded to one or two injections of neutral acriflavine. Where a second dose was needed it was given forty-eight hours after the first. Coughing and expectoration ceased abruptly in six cases after one injection and within twenty-four hours. In the other two it took seventy-two hours. No other medication was used or needed.

2. Lobar pneumonia (four cases—adults). One was postoperative, in which pneumococcus (type 4) was demonstrated in the sputum. All cases had definite symptoms; cough, rusty sputum, respirations 36-40, temperature 102-105° F. An artificial crisis was produced in each case in twenty-four hours with the usual injection. But early diagnosis and early treatment seem essential to get these results.

3. Bronchopneumonia. a. Five cases in children two to five and a half years of age. Two required a second dose twenty-four hours after the first injection (by enteroclysis). Temperature dropped in eighteen hours in three cases from 103-105.2° F. to normal. In two cases, after twenty-four hours it again rose to 100-101° F. The second injection reduced it to normal and cleared up the disease. An interesting feature of these cases was that the respirations of from 40-50 fell synchronously with the temperature to normal.

b. Bronchopneumonia in a man sixty-eight years of age who was debilitated as a result of diabetes, chronic nephritis, and angina pectoris. The first injection of neutral acriflavine made a marked improvement. Temperature dropped from 102.3° F. to normal but the second dose had no effect. He died on the fifth day of the disease.

4. Pertussis (one case, child three years of age). On the tenth day of the disease the child whooped and coughed incessantly, vomited all food and in twelve hours was delirious, pulse 150 and thready. Twenty c.c. of 0.5 per cent. neutral acriflavine solution were given by enteroclysis. Within twelve hours there was only an occasional slight whoop, not particularly distressing. After twenty-four hours slight whooping occurred only three to four times a day.

At the end of forty-eight hours a second dose was given, which terminated the treatment and practically eliminated the disease. Within one week after the first treatment and on the seventeenth day of the disease the child was quite well and rarely coughed. Five doses of pertussis vaccine had been given to this child two weeks before the onset but had no apparent effect either as a prophylactic or cure. A younger sister treated a few weeks previously with pertussis vaccine (five doses) but no neutral acriflavine, ran the usual severe course.

5. Erysipelas. a. Six cases, one failure. In three cases of facial erysipelas two injections forty-eight hours apart caused cure within seventy-two hours of the first treatment. In the case of a child four years of age where the disease had steadily progressed for two weeks in spite of all other methods of treatment and had spread over half the body; as a last resort twenty c.c. of neutral acriflavine half per cent. were given; but it required three injections to cure. The first two were given twenty-four hours apart, the last one forty-eight hours later.

b. Erysipelas and deep cellulitis of the arm in a barber who had cut his left hand with a razor. This patient was not seen until the eighth day of the disease. He died of general (streptococcic) septicemia on the fifteenth day of the disease.

6. Ludwig's angina (one case), left side of neck involved. Incision showed a gangrenous appearing cellulitis with a small pocket containing about four c.c. of pus. The disease spread rapidly and within twenty-four hours the left eye was closed, the ear, and the entire left side of the neck as far as the occiput were deeply infiltrated. Neutral acriflavine was then given. Within twelve hours the spread of the disease had ceased. In seventy-two hours the patient was well. He left the hospital on the fifth day with only slight drainage from wound.

7. Carbuncles (three cases). Same result as in Ludwig's angina, but two injections twenty-four hours apart were required in each case.

8. Orchitis following mumps (one case), temperature of 103-104° F. daily for five days. Both testicles swollen to size of a large orange. Great restlessness and sleeplessness but no pain. Fifty c.c. of neutral acriflavine were given on the sixth day of the fever. After twenty-four hours temperature still 104° F., no improvement in inflammatory conditions but twelve hours later sudden drop to normal. No further rise of temperature. Patient left the hospital cured on the third day following the injection.

9. Mumps (three cases). One treatment cured each of them. Stiffness and swelling commenced receding within twenty hours after treatment. Glands apparently normal in forty-eight hours, instead of seven to ten days as in the usual course.

10. Acute arthritis (two cases). a. Both wrists, left elbow and both knees involved. Had had an attack one year previously. Temperature 100-102° F. for three days. Chronic endocarditis was a complication. Two treatments given forty-eight hours apart. Temperature normal after twelve hours, pain gone in twenty-four hours. Patient left hospital three days later. A slight neuralgia in upper arm persisted for two weeks, but joints were then and are still normal. Mark and Olesker (*7*) showed the remarkable value of massive doses of neutral acriflavine in acute arthritis and endocarditis.

b. The second case was a severe recurrent arthritis of the right knee joint (cause unknown). It required two injections to cure. Each injection caused severe pain in joint lasting six to eight hours. Temperature ranged from 101-102° F. and fell only after second injection. Pain, fever, and swelling disappeared forty-eight hours after the second injection. Total time in bed was six days. Was able to work on seventh day from beginning of attack.

11. Gonorrhea in women (twenty-seven cases). These for the most part were old institutional cases of endocervicitis and vulvitis. From a résumé of this series of cases it is fairly evident that while neutral acriflavine (local and intravenous) is a valuable addition to our armamentarium it is not a specific in either acute or chronic gonorrhea in women. Its chief advantage lies in the lessening of discharge and irritation in the acute stages or in chronic mucopurulent (mixed infection) vaginitis. Its use must be followed up with other forms of treatment.

Why is it that in certain infections, or at certain stages of an infection, dyes give only a transitory effect, in so far as improvement is concerned, while in other similar cases an immediate response and cure takes place? There are probably two good reasons for this. a. In cases where areas are densely infiltrated and the local circulation is consequently impaired the dye does not penetrate all the tissues, e.g., deep cellulitis or advanced lobar or bronchopneumonias. The temperature drops as the bacteria which can be reached are overcome but the patient soon reinfects himself from the local area. b. In other cases where there is no dense infiltration or interference with the circulation it must be that certain strains of bacteria are more resistant than others or are of a type which cannot be killed by the particular dye used. Free drainage of pus is essential.

DOSE

No definite rules regarding doses of neutral acriflavine have yet been laid down. Mark and Olesker (*7*) believed that no harm would result from massive doses of ten mg. per kilo of body weight. This has been confirmed by the writer, but such large doses are rarely necessary.

1. Women are much more inclined to nausea and vomiting after the use of large doses of dye than men (fifty c.c. or over of one per cent. solution).

2. Old people do not stand as large a dose as young healthy adults. The initial dose for them should be thirty to thirty-five c.c. of half per cent. solution.

3. Children bear the first injections well, the dose being estimated by the old formula, i.e., the child's age over the child's age plus twelve of the adult dose.

4. Injections cannot be repeated more than four or five times at intervals of one week or less apart without causing annoying and sometimes alarming symptoms such as precordial pain, nausea, vomiting, and gastritis.

5. In chronic conditions half the maximum dose is quite as useful as the full dose.

6. In acute and violent infections in adults the maximum dose (fifty c.c. of a one per cent. solution) should be given at once and if necessary followed in forty-eight hours by a similar amount.

7. In acute infections unless the first two doses give a definite result such as reduction of temperature, relief of pain, etc., subsequent doses seem to be useless and may be harmful.

8. The usual dose used by me in acute conditions for healthy male adults of 150 lbs. weight or over is fifty c.c. of one half per cent. solution and in chronic conditions half of this amount. If the dye is likely to be effective in any given case this dose will be sufficient.

REACTIONS AND COMPLICATIONS

1. Within a few minutes of the injection of forty c.c. or more of neutral acriflavine in most cases the skin assumes a yellowish hue similar to that seen in jaundice. This does not entirely disappear for forty-eight hours. The dye appears in a few hours in the urine, tears, sweat and the vaginal secretions and will be excreted for approximately forty-eight hours.

2. Doses of more than thirty-five to forty c.c. of one per cent. solution to the average adult woman in about twenty-five per cent. of the cases will cause vomiting at least once and in some cases this vomiting recurs several times within the twenty-four hours. Vomiting sometimes occurs within five minutes of the injection. In none of our cases were men affected in this way even where fifty c. c. of one per cent. solution or more were used.

3. Old people (sixty-five to seventy-five years of age) after a second injection, if the dose is too large, complain for several days of weakness, lassitude and a feeling of general depression and may refuse further treatment on this account.

4. After the fourth or fifth injection, one week apart, some patients develop an attack of what appears to be gastritis, with loss of appetite, burning sensation in the epigastrium and occasional nausea. It may last a week or ten days but will clear up automatically without treatment. This reaction has occurred three times in the series.

I must leave it to the physiologists to explain several of the phenomena noted above. Why women are more subject to nausea or gastritis than men is not quite clear. It may be mechanical or chemical irritation of the gastric mucosa during excretion. It can hardly be explained upon a theory of nervousness as the reactions occur in women who are perfectly normal and hours after the injection is given.

5. One patient (female with chronic gonorrhea) presented albuminuria after the first injection of thirty-five c. c. of one per cent. solution and another who had slight albuminuria developed an acute nephritis with casts. Both of these cases cleared up shortly when no further injections were used. This suggests that uranalysis should be made before and after each injection.

6. In two patients (fifty-four and seventy years of age respectively) there developed severe pains in the chest (without fever). The pains were suggestive of intercostal neuralgia and lasted to some extent for ten to fourteen days.

CONTRAINDICATIONS

1. As far as I have seen the only two contraindications of importance which we can anticipate are old age and albuminuria. The former demands caution and smaller doses. Patients who have some idiosyncrasy against the dye and have had syncope or cyanosis following its use should not be given a subsequent dose.

2. Emphasis must be laid on the danger of using more than four or five injections at weekly intervals in one patient until further investigation is made of the phenomena reported, precordial pain, nausea, gastritis, etc. It is important that the solution be carefully filtered and be freshly prepared before use.

3. If the needle passes through the vein and any of the solution becomes extravasated into the tissues an immediate burning pain is felt at the site of the injection. A chemical cellulitis similar to that caused by salvarsan follows.

Diabetes is not a contraindication. Three cases of this disease where the dye was used showed no ill effects.

INTRACOLONIC USE OF NEUTRAL ACRIFLAVINE FOR CHILDREN OR ADULTS

Finding it difficult to enter the vein in small, nervous children and sometimes in plump women, the following technic for intracolonic injections was developed. Enteroclysis with neutral acriflavine seems quite as efficient as the intravenous method, although a little more troublesome to use. Acriviolet causes irritation of the colon and is usually expelled too soon to take effect.

The colon is thoroughly irrigated with one half to one gallon of one per cent. sodium bicarbonate solution. The child is allowed to rest for one hour or until the colon shows no further tendency to evacuate. According to age and size, twenty c. c. of 0.5 per cent. solution of neutral acriflavine or a proportionate dose is given to children through a catheter high into the colon. The foot of the bed is elevated twelve inches and the child's hips are further raised upon the pillow which is removed from under the head. The patient must remain in bed for three hours either on the back or right side and no food is to be given during this time. If it can be prevented it is important that the bowels should not move again the same day. The same technic, but of course a full dose, is used for adults whose veins are unsuitable for intravenous treatment.

In conclusion, it is my conviction from a review of the cases treated that a large number of acute infectious diseases (excluding gonorrhea) can be easily and rapidly cured by the use of aniline dyes. It seems necessary that early diagnosis be made and early treatment instituted in order to get uniformly good results. It remains for the patient investigator and clinician to discover definitely which diseases are amenable to a particular dye. I believe that in time aniline dyes will replace many drugs, vaccines, and sera at present in use and will open a new era in the therapeutics of disease.

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THERAPY OF THE NONSPECIFIC PROTEIN REACTION*

Observations Based on the Intramuscular Injection of Venom Protein (Crotalin) Solution in Six Hundred Cases

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(*Continued from page* 389)

LOCAL REACTION AND SYSTEMIC EFFECT

The degree of local reaction obtained from venom protein injection varies with the size of the dose and individual susceptibility. In most cases the patient complains of a slight burning or stinging sensation at the site of the injection which frequently radiates up and down the forearm for a few minutes. No further effect is noted for from two to six hours when more or less swelling, with sometimes a slight erythema, appears. The amount of local reaction produced varies in different subjects and a variance in susceptibility from time to time is often shown in the same individual. In the average patient there is but little cellulitis at the site of injection and this usually reaches its maximum in from twenty-four to thirty-six hours. The injected area will usually return to normal in two or three days.

As a rule venom protein injections, in doses ranging from one four hundredth to one fiftieth grain, produce no chill, fever, sweating or other systemic disturbance. Occasionally there will be a slight elevation of temperature for a few hours, but in most patients the normal temperature range is not disturbed. In many patients a feeling of euphoria is expressed a few hours after receiving an injection.

EFFECT OF VENOM PROTEIN ON THE BLOOD METHOD OF REGULATING DOSE AND FREQUENCY OF INJECTION

It has always been my practice to count the red and the white cells, to estimate the hemoglobin and to make a differential leucocyte count on each patient before any venom protein was used. More than three thousand white and red counts have also been made at the height of the local reaction and after it has subsided in this series of cases. Differential leucocyte counts were made twenty-four, forty-eight or seventy-two hours following the injections and the proportional relation of the white cells noted and compared.

An increase in the number of erythrocytes in twelve, fourteen or thirty-six hours following an intramuscular injection of venom protein has been a uniform finding. By comparing the total leucocyte count before and after injection it has been the rule to note a slight leucopenia within the first six or twelve hours, and by twenty-four or thirty-six hours to find the total number of white cells about what they were before the injection. I have never seen an increase to twelve or fifteen thousand or what could be called a leucocytosis from crotalin injections.

The following table illustrates the effect of venom protein injections on the red and the white blood count in a case of a thirty year old male epileptic:

TABLE I

EFFECT OF VENOM PROTEIN INJECTIONS ON RED AND WHITE BLOOD COUNTS

Day of Month and Hour	*Relation of Blood Count to Time of Infection or Convulsion*	*Leucocytes*	*Erythrocytes*
12th noon	Just before injection	8,000	4,400,000
10 p. m.	10 hrs. after "	7,600	3,600,000
13th 10 p. m.	34 " " "	7,800	4,700,000
19th 8 a. m.	4 hrs. before "	7,200	3,700,000
10 p. m.	10 " after "	7,000	3,100,000
20th 8 a. m.	24 " " "	8,200	4,000,000
6 p. m.	*Convulsion*		
10 p. m.	4 hrs. after convul.	18,000	3,100,000
21st 8 a. m.	14 " " "	20,000	2,750,000
7 p. m.	25 " " "	10,200	3,700,000
22nd 8 a. m.	38 " " "	7,000	3,900,000
24th 7 p. m.	Just before injection	7,600	3,200,000
25th 9 a. m.	14 hrs. after "	6,800	4,200,000
7 p. m.	24 " " "	6,400	3,750,000
26th 8 a. m.	36 " " "	7,200	3,950,000
1st 8 a. m.	5 hrs. before injection	7,000	3,800,000
10 p. m.	9 " after "	6,000	4,000,000
2nd 8 a. m.	19 " " "	8,600	4,300,000
10 p. m.	33 " " "	7,800	4,450,000
7th 10 a. m.	3 hrs. after petit mal		
	2 " before injection	9,800	4,200,000
10 p. m.	10 " after "	8,400	3,950,000
8th 8 a. m.	20 " " "	7,800	3,700,000
6 p. m.	30 " " "	6,000	4,500,000

In 1913 I called attention to the value of a routine study of the differential leucocyte count (6) as a guide to determining the strength of dose and frequency of administration. The injection of venom protein in over six hundred cases, in which the differential blood counts have been recorded and compared, has led me to make it a routine rule to use the percentage of eosinophiles produced following an injection as a guide to the strength dose of venom protein as well as to the frequency of administration.

As pointed out above (Table I) venom protein injections are not followed by a general leucocytosis, but they do alter the proportional relation of the cells in the differential count. In large enough doses to produce mild anaphylaxis, I have seen an increase of eosinophile cells to as high as twenty-five and even forty per cent. with a corresponding reduction in the relative number of polymorphonuclears.

Clinical experience seems to indicate that with crotalin injections in doses large enough to cause a biological reaction following which not more than an eight to ten per cent. of eosinophilia appears in the differential leucocyte count, we have an agent which produces a state of cell stimulation and altered permeability of cell walls corresponding to that stage in the mechanism of the nonspecific reaction which is of therapeutic value. This stage might be termed a preanaphylactic state.

As a rule the highest percentage of eosinophiles, following the range of doses (one four hundredth to one fiftieth grain) which I have used, occurs by the

*Read before the Philadelphia County Medical Society, April 9, 1924.

second or third day. In from five to seven days after an injection, the eosinophile cells as a rule will again have dropped to four per cent. or under and the patient may be given another injection. It has been my practice not to repeat an injection if the percentage of eosinophile cells by the fifth day has not dropped to at least four per cent. Moreover, it has not seemed wise to increase the strength of dose as long as any given strength is producing an eight to ten per cent. eosinophilia on the second or third day after injection.

TABLE II

EFFECT OF VENOM PROTEIN INJECTIONS ON THE PROPORTIONAL RELATION OF THE LEUCOCYTES IN THE DIFFERENTIAL COUNT.

Day of Month	*Relation of Count to Time of Injection and Convulsion*	*Poly.*	*S.L.*	*L.L.*	*Eosin.*	*Baso.*	*Trans.*
2nd	Before injection.	67	20	4	3	—	6
4th	42 hours after injection	58	27	2	8	1	4
9th	Before injection and 5 hours after convulsion	88	9	1	—	—	2
11th	45 hours after injection	61	18	3	8	1	9
16th	Before injection.	70	14	4	1	1	10
18th	48 hours after injection	58	23	5	6	—	8
23d	Before injection.	65	24	2	2	—	7
25th	42 hours after injection	55	22	5	9	1	8
29th	Before injection.	71	20	1	3	—	5
31st	45 hours after injection	57	29	2	6	—	6

To sum up my experience, I have found that when venom protein injections are given intramuscularly and are regulated by the percentage of eosinophiles in the differential leucocyte counts, they produce little local reaction and discomfort. Moreover, there is no shock or vasomotor paralysis and practically no disturbing systemic reaction. Chill, fever, nausea and vomiting or depressing symptoms have been absent, and patients receiving crotalin injections on an average of once a week can attend to their routine occupations without the slightest inconvenience.

OBSERVATIONS ON PRACTICAL THERAPEUTIC EFFECTS

We do not know the fundamental processes underlying the symptom complex of disturbed metabolism we term epilepsy, but in an experience with the treatment of over six hundred cases I have witnessed some striking therapeutic results following the nonspecific reaction of venom protein. In earlier papers I have submitted detailed case reports and will add none at this time. Venom protein has not relieved or even improved the convulsive symptoms in all of my cases. However, when one considers the depressing effect of the bromides and has witnessed the mental deterioration and maniacal outbursts which occasionally follow the excessive use or sudden withdrawal of luminal, it is a great satisfaction to note the improved metabolism produced by the nonspecific effect of venom protein.

Independent of the convulsive symptoms which have been relieved or greatly modified in many of my cases, the effect of the venom protein injections on the general metabolism and health of the patient has been uniformly beneficial. It is the rule for the patients to gain in weight. The stimulation of the red bone marrow following crotalin injections increases the number of the erythrocytes. The hemoglobin percentage rises and the patient experiences a feeling of well being which is very evident.

The general resisting power of patients who receive venom protein injections is increased and intercurrent illness is infrequent. Injuries and cuts as a rule heal promptly without infection. Susceptibility to infection and contagious diseases is lessened. I have seen epileptic children who were receiving venom protein injections exposed to scarlet fever, measles, chickenpox and grippe and not contract the disease. Following the influenza epidemic of 1918, I reported an observation made on forty-four patients who had been receiving venom protein injections for three months or longer, thirty of them were directly exposed in the same house with one or more persons suffering with influenza and yet only three of the forty-four patients presented modified symptoms of the infection. In two other patients to whom one injection of venom protein had been administered severe cases of influenzal pneumonia developed.

Finally, I wish to call attention to the adjuvant effect of venom protein injections when administered in conjunction with other drugs and the glands of internal secretion. Its adjuvant effect, when used with luminal, is illustrated in the following case:

Case I.—Eight months ago an eighteen year old high school girl was referred to me with the following history: She had had spasms in infancy and at the fourteenth year fainting spells with almost daily seizures of petit mal began. Six months later menstruation was established but was always irregular at six, eight or ten week intervals. About this time convulsive attacks began but seemed to bear no relation to menstruation. Bromides had been given without results. For six months before I saw the girl she had been on luminal which had been increased to six grains daily. At this time she complained of drowsiness, constant vertigo and loss of ability to concentrate so that school work had to be discontinued. In spite of the large doses of luminal she had four grand mal and daily petit mal seizures during the two weeks before I first saw her.

Venom protein injections were started at weekly intervals and the luminal was reduced to one and a half grains daily for a month and then to three quarters of a grain. This latter daily dose of luminal has been continued with a weekly injection of one one hundredth grain of venom protein for the past seven months. During the eight months the patient has been getting the venom protein injections and the small dose of luminal, one grand mal attack has occurred and she has had two petit mal seizures. The young lady is back at high school finishing her senior year. She is mentally alert, has lost much of her apprehension. Six menstrual periods have occurred in the course of eight months.

Space will not permit me to detail case reports showing the adjuvant effect of venom protein in conjunction with the use of other drugs. I will only mention that in cases of migraine, periodical neuralgia and arthritis, I have seen the value of iodides, acetanilide, and the salicylates greatly enhanced by the adjuvant effect of venom protein.

(To be concluded)

Historical Medicine

Historical Evolution of the Doctrine of Crises in Disease*

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Montaigne has said: *"Les arts et les sciences ne se jettent pas au moule, ains se forment et figurent peu à peu en les maniant et polissant à pleusieurs fois, comme les our façonnent leurs petits en les lechant à loisir."* How true this is of medicine. In all ages physicians have been struck by certain sudden intense phenomena, following which an apparently serious acute disease fades away and disappears. Certainly it is most fascinating to observe the sudden cessation of a pneumonia occurring on a practically fixed day, with almost constant phenomena.

The actual existence of these facts has never been denied, but their nature has given vent to numerous contentions and for this reason I have considered it a matter of historical interest to follow through the past the discussions that have arisen in respect to this subject. In point of fact, the doctrine of crises in disease has invariably faithfully reflected the image of the opinions of all past general pathologists, as well as medical philosophers. This doctrine offers us the opportunity of realizing the general tendencies of the opponent schools and reveals the fact that in all ages both physicians and thinkers have been divided into two chief sects. Those possessed of a synthetic mind have attempted to classify facts, then to interpret their meaning; others of analytical minds have declared that it is enough to record facts whose explanation is only to be sought for in tangible phenomena.

This divergence of opinion is clearly accentuated in the early medical writings that have come down to us, and Hippocrates, and with him the School of Cos, leads the partisans of synthesis. The history of crises in disease has been thoroughly dealt with by the writers of the early part of the last century and they affirm that on this point the opinions of Hippocrates are rather variable. But I cannot subscribe to this opinion, because, quite to the contrary, one may construct a rather fixed doctrine if, with Littré and Daremberg, care be taken only to select from the hippocratic collection those writings directly emanating from the School of Cos and to leave aside those which have been altered by the Cnidian Schol.

Clearly, Hippocrates in his book on *Airs, Waters, and Places,* does not scorn details, because when treating of the etiology of disease, he insists upon external influences—cosmic and others—but still more, he asks by what organic means these palpable causes—be they exact or erroneous—act and how they give rise to disease. Thus following the current of preceding doctrines, Hippocrates attributes disease to a defect of the organic humours. Health is the result of crasis of the humours, that is to say, their mixture in proper proportions. Now, if the crasis is disturbed by a qualititative or quantitative change of the fundamental fluids of the economy, the result will be organic suffering. During a pathological state the humours—tenous or crude—circulate throughout the body and then undergo a transformation in the form of a kind of thickening and mollification or coction, a process similar to what takes place when certain substances are cooked. All this is due to the action of vital forces, to the happy interference of *vis medicatrix naturæ,* which has become engaged in the struggle against the morbific principle. Then after coction of the peccant humour, the *vis medicatrix* tends to expel it.

During the struggle the organism will be—according to circumstances—either victor or vanquished, and the crisis is the judgment handed down in either case. Thus the crisis will be favorable or bad, perfect or imperfect. The complete expulsion of the deleterious agent by way of the natural outlets constitutes a favorable crisis. But nature likewise may be powerless completely to eliminate the cause of the affection. Or else the noxious humour having undergone coction may enter into some particular organ or organs instead of being directly conducted to the emunctories. In these circumstances a crisis from deposit results which will have a happy outcome if the organ involved is of small importance, but when the viscus is indispensable to life, the result will be an unfortunate one.

Briefly put, a crisis is the end of morbid evolution. Frequently it takes place at determined times; there are days of predilection called critical days and these may be calculated ahead of time by a close examination of phenomena occuring on certain preceding days, called indicative days. And Hippocrates, in all probability obeying the Pythagorean doctrine of numbers, emitted the law of septinaries and semiseptinaries. But he maintains a prudent reserve in respect to this, and teaches that a crisis may take place the evening before, or on the day following the day on which it should ensue. Consequently, the physician above all things should watch the evolution that nature tends to develop, although he is obliged to direct the course of events, as is clearly stated in the work on *Humours, I* and *IV*. The naturist did not meditate on death, as Asclepiades later on maintained; he meditated on the crises, above all things studying every phenomenon common to disease, its progression and natural evolution, and with this end in view, he took into consideration the patient's general health, searched his antecedent history, observed the present, and scrutinized the future. Briefly put, for the Cosan School, medical science in its entirety converged towards prognosis.

Such are the ideas Hippocrates especially developed in this book: *The Prognosis.* It is prin-

*A lecture delivered before the Geneva Medical Society, October 25, 1923.

cipally in this work that the chief of the Cosan School considers in detail the organism and the disease, and concludes by saying: "One should never ask the name of a malady which is not to be found in this treatise, because all those that are recovered from within the limits of time given are all to be recognized by the same signs."

However, already at this epoch an inverse tendency is to be found in the Cnidian books of the hippocratic collection. Morbid varieties have been multiplied, and subdivided, and hence often happy descriptions were given, but in which a general directing idea was wanting. Thus the doctrine of crises lost both simplicity and unity; a fact that has caused many of Hippocrates's commentators to say that the physician of Cos often varied in what should be understood as a crisis.

The conceptions of the Cnidian School (about three hundred years B. C.) were unquestionably more readily to be understood than the general conceptions of the Cosan School, so that within the lapse of a century they dominated, at the time when Alexandria became the most important centre of medical learning. Here Herophilus, a student of Praxagoras of Cos, and Erasistratus, a student of the Cnidian Chrysippus, taught, so that reason founded on experience—dogmatism—was still in honour at first, but their disciples soon exaggerated the doctrines of the masters so that Philinus and at a later date, Serapion, the founder of empiricism, upheld that in medicine, reasoning was time lost.

This tendency, notably attenuated, is to be found in the writings of the Methodists. Asclepides, of Bithynia, (100 B. C.) who arrived in Rome in the time of Pompey, was the first whose opinions have reached us, thanks to Aurelianus. The promoter of solidism, he rose against the hippocratic theory of disease, crises, and critical days: *"neque inquit esse in passionibus statos dies quos crisimos appellant. Etenim non certo aut legitimo tempore aegritudines solvuntur.* Themison was his disciple, and developed his ideas. To him we are indebted for the theory which attributes all diseases to relaxation and contraction. However, he must have perceived the insufficiency of these purely solidist interpretations because between the *strictum* and the *laxum,* he admited a *mixtum.*

Celsus is the mouthpiece of the Methodist sect and I would point out that he stoutly denies the influence of the critical days: *"Vernum, in hic quidem, anti quos tunc celebres admodum pythagorici numeri fefellerunt."* (Lib. III, Cap IV.) On the other hand, Celsus's fourth book is devoted entirely to the subject of pyrexias and no mention of crises is made.

Methodism, that is to say, solidism, also gradually assumed considerable importance and towards the end of the first century of our era and the commencement of the second, it was brilliantly defended by Soranus, of Ephesus. The hippocratic conception of disease, with crudity and coction of the crisis, became profoundly disturbed, until a man appeared who again took up the ancient doctrine, developed and systematized it, and then made it triumphant for fifteen centuries, although he had fashioned it after his own ideas.

In point of fact, Galen (*De crisibus,* lib. III, cap. II) had notably changed the doctrine of crises. According to him, a crisis is *"sola subita ad sanitatem conversio,"* in order to exist, it must be preceded by a manifest disturbance of the economy and to reveal itself *"per manifestas quasdem excretines aut effata dignos abcessus."* Nevertheless, Galen admits the occurrence of imperfect crises in which a sudden change of the morbid evolution does not terminate in recovery. Consequently he enjoins that a crisis must be preceded by a bodily disturbance, that it must be sudden in occurence, and give rise to profuse evacuations. Therefore, it is clear that he distinctly separates lysis, by which process a disease slowly retrogresses without any marked evacuations.

It is evident that this conception is far less simple and less synthetic than that of Hippocrates. Entering still deeper into the study of details, Galen developed the doctrine of critical days to an excessive degree. The critical days are those on which the crisis should take place. They were divided into: 1, the decreed or principal critical days; 2, the indicatory critical days, and 3, the intercalary critical days. The principal days were those on which the crisis usually occurred, namely, the seventh, fourteenth, twentieth, or twenty-first days of the disease. All acute diseases ended in forty days and frequently much sooner, so that their ordinary evolution was divided into weeks. The indicatory days divided the week into two parts, and announced what was to occur during the following quaternary. For example, the fourth day of the week was the index of the seventh. Hippocrates says in his *Aphorisms*: "Those [diseases] which should be judged on the seventh [day] present a white hypostasis in the urine on the fourth [day]." This likewise applies to the eleventh, seventeenth, and twenty-fourth day.

The intercalary or provocative days were those on which a crisis irregularly took place. They were to be feared because frequently they announced a relapse. These days were the third, fifth, sixth, ninth, thirteenth, and nineteenth. Finally, the remaining days were termed empty or nondecretal, because a crisis rarely occurred on them. These days were the second, sixth, eighth, tenth, twelfth, sixteenth, and eighteenth of the disease. They were also called medicinal days, because, being inconsequent in so far as the disease was concerned, they were of importance to the physician as he could interfere therapeutically.

In Corvisart's edition of Avenbrugger it is stated: *"Ils sont pour ainsi dire les jours de l'art qui n'a presque ancun droit sur tous les autres, puisqu'il ne lui* [the physician] *est jamais permis de déranger la nature qui partage son travail entre les jours critiques."*

Among the latter, the sixth day was, for Galen, especially inauspicious, while the seventh, on the contrary, was the most favorable: *"Nihi quidem frequenter in mentem venit septimi dici naturam regi assimilare, sexti vero tyranno. Ille siquidem providet tanquam bonus aliquis princeps iis quos judicat ut vel supplicii partem adimat, vel illustret victoriam."*

This faith in the happy power of the number seven was deeply rooted in the minds of the ancient

physicians. It is referred to by Solon and invariably the writers of ancient times exerted themselves to prove its virtue.

Dulaurens, in his *Traité des Crises* (Livre II, chap. IX) says: *"Les Aegyptiens, Chaldéens, Grecs, et Arabes, ont laissé beaucoup de choses par escrit touchant l'excellence du septenaire que je fais i cy á escient pour ne charger le papier de telles badineries, qui soubs ombre et pretexte des nombres ont la vogue parmy le monde. Car qu'importe au sage s'il y a sept pleyades, si les deux Ourses sont faictes chacune de sept estoilles, s'il y a sept merveilles au monde, s'il y a sept planètes, sept hyades, si la lune a sept faces, si les septentrions grandes et petits sont sept, si les changements de la voix sont sept, s'il y a sept movemens naturels, si les choses qui se voyent sont sept, s'il y a sept aages, sept voielles en la lanque grecque, sept sages, sept metaux, si le Nil a sept bouches . . . si sept arts liberaux, sept causes des actions humaines, sept villes qui querellent pour l'extraction et naissance d'Homére, etc. . . ."*

The opponents of Hippocrates contested his moderate opinions in respect to critical days. Galen made still more exaggerated assertions and he especially should be censured for allowing himself to be guided in his system by the vagaries of Pythagoras. Nevertheless the galenic doctrines were accepted by the Islamic physicians, who still further accentuated the superstitious aspect. Galen referred to the influence of the moon on crises, while the Islamic writers combined it with all the other astral bodies.

It was the Galenism perverted by the Islamic physicians and mixed with astrology which, supported by the principal authority, reigned in Europe throughout the medieval ages, and even later, because even at the beginning of the seventeenth century, David de Planis Camp (1) dedicated to the Queen, mother of the King, a *Bref discours des crises, ou il est monstre comment l'on s'abuse au jugement d'i celles ne cognoissant le movement des astres.* (Paris, 1640.)

"Les praticiens de ce temps," says J. B. Aymen (2), *"ne jugent les maladies, qu'après avoir examine avec attention la place qu'occupaient les astres soit dans les premiers moments de la maladie, soit dans les jours dans lesquels ils prescrivaient les remedès; la superstition fut même si avant que le medicin n'eut pas cru être en état de querir personne, s'il n'eut connu dans quelle position etaient les planètes au moau moment de la naissance du malade."*

(To be concluded)

Contributions to the Science of Medicine

Lord Lister

Surgery was revolutionized by Pasteur and Lister. The French chemist, the true founder of bacteriology, although not a medical man, did more to change the prevailing conceptions and practice of medicine and surgery than any man, and Lister, as far as surgery is concerned, carried the ideas of the master to definite conclusions. At the unveiling of a memorial to Lister in Kelvingrove Park, Glasgow, on September 17th last by Sir Hector Cameron, emeritus professor of surgery in the University of Glasgow, and one of the last survivors of Lister's house surgeons, he made an interesting speech a part of which was so apt that it will be quoted here. In giving an account of the surgery class in the University of Glasgow in 1862 when Lister was professor, "one of my fellow students," he said, "was Frederick Trendelenburg. Some years ago in a letter which I received from him, he observed that while we all regarded Professor Lister with great respect and admiration, none of us could foresee that he would one day change surgery from the very bottom." This was a just remark.

Lister was a conspicuous example, of which many have been afforded in history, of the truth of the old proverb that "a prophet hath no honor in his own country." It is curious that pioneers in every sphere of endeavor are almost universally distrusted and pioneers in medicine perhaps the most distrusted. In Great Britain the medical profession are conservative and bound by tradition and it takes time for new theories to take root. Thus it is not astonishing that for long Lister was regarded as wrongheaded, and the imperfections of his original primitive methods are even yet pointed to as illustrating the exaggerated nature of his claims.

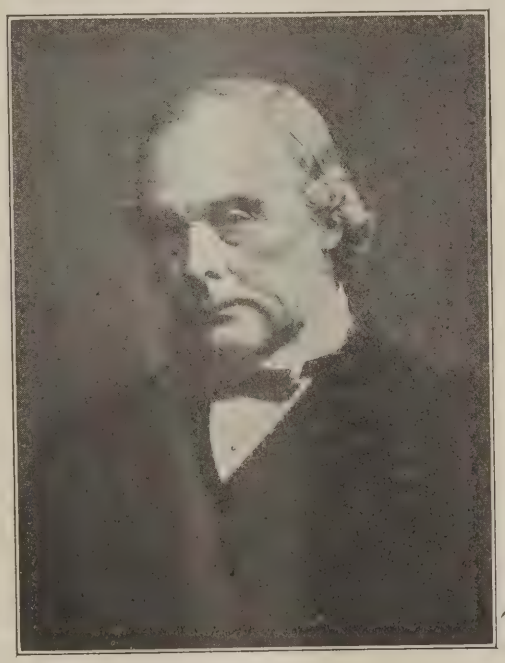
Surgical skill was at a high standard when Lister was a student; he was born in 1827, and witnessed the first operation in 1846 under the general anesthetic by Robert Liston, that wizard of the knife. At the same time, despite the marvelous dexterity and coolness of the surgeons, a large proportion of the patients who underwent major operations were carried off by the ravages of erysipelas, pyemia and hospital gangrene, while the dread of such happenings restrained frequently surgeons from operating when by so doing life might have been saved or crippling prevented. Liston taught the necessity for strict cleanliness and for combating the germs of infection in the operating theatres and in the surgical wards.

His student's life was passed at University College, London, from 1844 to 1853. He was born of Quaker parents and educated at Quaker schools. His father was engaged in business, but was a man of high scientific attainments, a Fellow of the Royal Society of England, and who made great improvements on the achromatic microscope. According to Sir Rickman Godlee, whose life of Lister is the most reliable, he had exceptionally good abilities, a retentive memory, the power of concentration, and unlimited patience and enthusiasm in investigating every doubtful question and pursuing each investi-

gation to the bitter end. In short, he was fully endowed mentally and temperamentally with the qualities which go to make the successful scientific investigator, and lastly he was well enough off not to be under the necessity of earning his daily bread and thus could spare the time for research with a mind free from money worries.

In 1853 he left London for Edinburgh where he found a larger and in many respects a better school of medicine than at University College. At that time Mr. Syme was the great surgeon there, probably the greatest surgeon of the day. Lister stayed on in Edinburgh first as house surgeon and later as assistant surgeon to the Royal Infirmary and extramural lecturer on surgery. In 1856 he married Syme's eldest daughter.

His first serious scientific studies were concerned with inflammation, a subject on which he wrote and published several important papers, becoming well known throughout the world for his scientific work. He left Edinburgh to take the position of Regius Professor of Surgery in Glasgow University, where he spent nine years and did most of his best work. 1865 may be termed the birth year of antiseptic surgery although it was not announced publicly until 1867. At that time hospitals of Great Britain and indeed of the civilized world were in such an infected state that in Scotland and in England it was seriously contemplated to destroy the hospitals wholesale in order to replace them by villages of temporary huts. However, in 1860 or thereabouts, Louis Pasteur solved the problem of the cause of decomposition.



LORD LISTER

In writing concerning Lister it is difficult to fix with any degree of exactitude his place in history, and, in fact, his work is so bound up with that of Pasteur that in writing of Lister's discovery, it is not easy to avoid bringing in Pasteur. The discovery was entirely due to the results of Pasteur's investigations on decomposition which showed that it was a form of fermentation and subject to the same laws caused by microorganisms conveyed by the air. His first attempt to put Pasteur's discoveries into practice is described at length in an "epoch making" paper on a new method of treating compound fractures, abscesses, etc, published in the *Lancet,* 1867, vol. I, pp. 326, 357, 387, 507; vol. II, p. 95. Lister's idea at the time was that the air was teeming with the particular germs which caused decomposition and his attention was concentrated upon devising means to destroy the germs in the air to prevent them from reaching the injured parts, and to destroy them in these parts, and he paid no heed to their other habitats. Also his agent for accomplishing this purpose was crude carbolic acid, a far from ideal medium for the purpose. At the time, it may be recalled, little was known of bacteriology and nothing of the defense of living tissue. Therefore, although the method was primitive, it introduced the principle of aseptic surgery, which together with the employment of anesthetics has revolutionized surgery regarded from all aspects.

The paper made a deep impression upon the surgical world in spite of the fact that its true inner significance was grasped only by the few, namely, that it heralded the dawn of a new era of surgery and that the treatment was applicable to all wounds.

Between 1867 and 1870 Lister improved his methods and his success in the previously unhealthy Glasgow wards under his charge was so striking that the advantages of this form of treatment seemed selfevident. And yet British surgeons refused to be convinced, indeed the majority of them perhaps, became definitely antagonistic. The reception of the doctrine abroad or, at any rate, in Europe was in marked contrast to the frigid or inimical reception in his native land. Unbiased by personal considerations, the surgeons of the Central European Empires and of Scandinavian countries, where the state of the hospitals was worse than in Great Britain, were willing to give the new treatment a fair trial and, on the whole, were cordial towards it.

Little progress was made in France or Italy and the same may be said of America. In truth, in these countries this new departure from the beaten track was regarded as an experiment not to be followed until a distinct verdict in its favor had been delivered in those parts of Europe in which it had been employed. In 1869 Lister was appointed to the chair of clinical surgery in the University of Edinburgh, a position he held until 1877. This period was the most brilliant of his career. Shortly before he left Glasgow his father died, and in 1870 Syme died.

In Edinburgh Lister had the largest class in Great Britain, and in many ways Edinburgh was an ideal place for launching and establishing a new system of surgery. It lacked the distractions of an immense city like London, and what was more to the point there was no opportunity for one's time being almost wholly taken up with the exigencies of a huge private practice, a catastrophe which has overtaken many brilliant medical men who in more favorable circumstances might have given to the world discoveries of inestimable value. Lister devoted all the time he could snatch from his duties to experimental research, which was largely concerned with improving and modifying his methods and in seeking the perfect catgut ligature.

Bacteriology was emerging somewhat rapidly from its swaddling clothes and, of course, with increase

of knowledge in this direction Lister soon found that the treatment of wounds by his methods was by no means so simple as it first appeared and he experimented widely and published the results. As Godlee has pointed out, it should be borne in mind that aseptic surgery as it is now understood was from almost the first, Lister's ideal, and that he tried to adopt it himself as early as 1865 and on later occasions, but did not persist with the attempt because in his opinion antiseptic treatment was equally efficient and carried out more easily by far.

Von Bergmann was the scientific father of the aseptic technic and its successful employment was due mainly to Metchnikoff and Almroth Wright and their followers.

After he had spent eight of the most active years of his life in Edinburgh he accepted the chair of clinical surgery at King's College, London, succeeding Sir William Fergusson. The main opposition to his views was in London, and while it was perhaps an advantage for Lister to be able to promulgate his views in the enemy's stronghold, on the other hand there were decided drawbacks. The hospital was small and he did not, as in Edinburgh, attract a large class. The London student was cold and indifferent to views which had not been generally accepted. He was in London for longer than thirty years, during the first half of which he was engaged in hospital and private practice and he continued his laboratory researches which were given over mainly to the search for a perfect catgut and a perfect gauze. In 1853 he was given a baronetcy and by degrees he took his rightful place as one of the leaders of the British medical profession, the old jealousies and heartburnings of the London surgeons having disappeared gradually.

In 1893 Lady Lister died suddenly in Italy, and owing to the age limit he retired from the surgeoncy of King's College Hospital. Consequently at the age of sixty-six he found himself childless, without hospital appointment and without private practice. Laboratory work, too, was almost laid aside, partly because the loss of the wife, who had been his faithful helper and amanuensis, had largely killed his interest in it but chiefly because, except for the question of catgut, he had made all the improvements possible in the dressings. As for bacteriology it had become and was becoming so complex a subject that in order to keep pace with its progress a person must be continually studying it. He threw himself into his public duties, which were many, with energy. He was appointed foreign secretary to the British Royal Society, and in 1895 he succeeded Lord Kelvin as president. His annual addresses showed how closely he kept himself in touch with the leading scientific questions of the day, and as Godlee says should be read by anyone who is disposed to regard him as a man of one idea. In 1896 he was president of the British Association.

In 1897 he was made a peer and took an active part in the House of Lords in debates on public health and sanitary science. In 1900 he delivered the Huxley Lecture, and in 1901 took part in the Tuberculosis Congress.

The Huxley Lecture is given every two years at Charing Cross Hospital. Michael Foster, the great English physiologist, gave the first. Virchow gave the second, and Lister the third. After the Tuberculosis Congress at which Koch made the announcement that bovine tuberculosis is rarely if ever transmitted to human beings, he passed almost wholly from the public eye. He received numerous honorary degrees and other distinctions and there were celebrations of his eightieth birthday at home and abroad. He had a serious illness in 1903 from which he really never recovered, and the last years of his life were devoid of incidents worthy of record. He died on February 10, 1912, nearly eighty-five years of age. There was a public funeral in Westminster Abbey and he was buried by the side of Lady Lister in the West Hampstead Cemetery.

Like Pasteur, without whose researches Lister's discoveries would have been impossible, he lived long enough to enjoy the fruits of his labors and to know that the value of his work was recognized.

In 1875 Lister made a tour of Europe and met, especially in Germany, with an extraordinarily enthusiastic reception. In the following year he attended the meeting of the International Medical Congress in Philadelphia, where he likewise received an extremely warm welcome. Up to this time, however, his teaching had taken no deep root in America. His presence, his addresses and demonstrations appeared to kindle an intense interest in the matter, and from that time on American surgeons studied and practised the principles of Lister with zest.

In person Lister was a well built, muscular man, about five feet eleven inches in height, fond of active exercise and of swimming and skating. He was a charming companion, although when older he became somewhat ceremonious, inspiring a certain amount of awe. He was the subject of the unbounded love of his Scottish students; to them he was always "the chief," and as the Scotchman goes to every corner of the earth, they carried his fame and teaching everywhere. While by no means eloquent he was an effective speaker and impressed his hearers by his obvious earnestness. He was a good linguist, knew French and German sufficiently well to make public speeches in those languages, and had more than a nodding acquaintance with Spanish, Norwegian and Dutch. He was a good artist so far as anatomical, pathological, botanical and microscopical drawings were concerned. He appears to have had no fads to interfere with his scientific work. He was a sound operator, careful, methodical, thorough and slow. He introduced some new operations and invented some new instruments. He was a resourceful experimenter. His apparatus was simple, most of it he made himself and the rest he designed. He was essentially a serious man and undoubtedly his Quaker upbringing had a great influence on his attitude towards life.

It is too soon and would be futile at the present time to attempt to forecast what the verdict of history on Lister will be. As Godlee points out it is more than likely that his originality will be doubted by some captious critic because he only worked out the discoveries of Pasteur. It cannot be denied by the most captious critic that he was the first to grasp its significance with regard to wound treatment and that through him aseptic treatment has reached its present high standard, which has made surgery comparatively safe and has rendered possible operations

which could not even have been attempted under preaseptic conditions. He pointed and showed the way which others have followed to the great and lasting benefit of suffering humanity. The names of Lister and Pasteur will go down through the ages as men who robbed surgery of many of its worst terrors.

The Siamese Twins of Espanola (The First Known Postmortem Examination in the New World).—A. Pena Chavarria and Dr. P. G. Shipley (*Annals of Medical History,* September, 1924) give us the history of perhaps the only postmortem examination ever conducted to study the soul of the deceased, and what is believed to be the first pathological examination made by white men in the western hemisphere. It antedates by more than a half century that performed on the dead scorbutic soldier by Cartier's surgeons at Stadcona. The account was found in Oviedo's *Historia General y Natural de las Indias.*

Gonçalo Fernández de Oviedo y Valdés was born in Madrid in 1478. In his early boyhood he served as page to the nobility of Aragon, and at thirteen became a member of the household of Ferdinand and Isabella as the companion of their son, Don Juan, and so came in contact with the most brilliant court of Europe, with its splendid festivities, gorgeous tournaments and jousts, and chivalric and heroic traditions. Here he met Columbus, of whom he writes, "His memory shall have no end, for when all that is written and shall be written shall have perished from the earth, heaven itself shall perpetuate this famous story."

Driven by dissatisfaction with the conditions which existed in Spain, Orvieto set out to wander over the world, practising the profession of letters and of arms. He made the acquaintance of Titian, Da Vinci and Michael Angelo, of Sanazzaro the poet, and of Pontano, and carried on his studies. After a number of years he took passage for the Americas to record the history of the world, a project he had conceived in 1492. On the 12th of June in the year 1514, the first historian of the western hemisphere saw the land. In October of the following year he returned to Spain, having begun his history, and carrying as presents for his sovereign six cannibals, the first sugar from that part of the world to reach Europe, cassia fistula, six Indian maidens, and thirty parrots.

On a second voyage he was very ill with what was described as "acute continued fever" (perhaps malaria) and was believed to be dying. He had asked a sailor to destroy a blanket that had been used for him during his illness, and the man was proceeding to do so when Oviedo's servant, who had not heard the request and who thought his master unconscious, called out, "Don't take that! If you do, we shall have nothing to wrap around him when we throw him overboard." Oviedo heard the remark and rose in anger from his bed declaring, "I shall not die at sea nor shall I, I trust, be buried anywhere save in consecrated ground." His recovery dated from that moment. He made the voyage to the New World and back twelve times. During the latter years of his stay in America he served as captain of the fortress and city of Santo Domingo on the Island of Española. He did not live to see the whole of his great history published. Death came to him in Valladolid in 1557, and smote him, pen in hand, in his seventy-ninth year. His biographers write of him: "He was omniscient in the knowledge of his day, and his book is abundant evidence of that fact. He wrote ably of the customs and habits of the savage people he found about him, and, though neither a botanist nor an entomologist, his descriptions of the fauna and flora of the New World were above reproach. He was no physician but he has left good records of some of the diseases of the tropics. He recorded the case history quoted below, clearly and thoroughly in excellent language and style, missing no important detail."

The case recorded by Oviedo was that of a double monster born to a woman of Santo Domingo, which he was stimulated to report by reading the case of the two headed boy of the Arno described by Fierenze.

These Siamese twins, which were females, were seen by Oviedo, in the company of the important officials, priests, scientists and residents of the vicinity. The children were joined from the umbilical region upward to a point on their thoraces just below the breast. The writers quote the detailed description given by the historian, which is a testimonial to the fact that he must have been well acquainted with much of the medical knowledge of his day and also with the best medical literature of that period.

The twins died on the eighth day of their life, one shortly before the other. Their baptism was a great problem to the good priest of the town, for he could not tell whether this curious body housed one or two souls. However, he very cleverly got over the question by administering the ritual of baptism for those concerning whose previous baptism there is doubt. But apparently he was too conscientious to be satisfied by this begging of the question, for the dissection of the twins after their death was done largely for the purpose of resolving the doubts concerning whether there were one or two souls, no attention being given to cause of death. This was probably the reason why the parents consented to an autopsy, for the feeling against medical investigation was much more intense then among the laity than today.

The full description given by Oviedo, in brief, amounts to saying that the twins had in common only the umbilicus and the liver. Our writers comment: "The holy church at that time was not giving much consideration to the liver as the seat of the soul and the doctrine of the omphalopsychists was damnably heretical. But there was more to be said as to the blood being the seat of the soul since according to the Vulgate *anima omnis carnis est in sanguine,* which is a definite, precise, and authoritative statement. . . . But we confess that we feel as did Oviedo and his friends, that for practical purposes the decision as to individuality was best made on physiological rather than anatomical grounds. The church allows that soul and body separate at death and since, beside carrying on separately the visible functions of life, Johanna and Melchiora died separately, the conclusion that they were animated by two individual souls seems justified. . . ."

Editorial Articles

GENIUS

The defining of genius seems as difficult as the defining of life, of which it is the flower, yet the definitions that have been given are not diverse, even if they are partial or indefinite. The latest essay in this field is that of Bernard Shaw in the preface to his *Saint Joan.*

That Joan was a genius there is no denying, and she has won the respect and admiration of geniuses of a higher rank than Shaw. His definition reads: "A genius is a person who, seeing further and probing deeper than other people, has a different set of ethical valuations from theirs and has energy enough to give effect to this extra vision and its valuations in whatever manner best suits his or her specific talents." Certainly he has hit the point in his first phrase, for the genius has no more money making or fame finding end in view, nor does he work from hand to mouth—from day to day—but with a far distant goal. It is true that he may need to do hack work to fill his belly withal, and he may even lapse, at times, near the commonplace. Beethoven wrote much, for him, ordinary music, but he appraised these compositions accordingly. Even the best critics cannot tell some of the works of Raphael or Michel Angelo from those of their contemporaries and assistants, and the same is true of the writings of Dumas and other authors. Nevertheless, these lapses only make us recall that the genius is human. If he were not, he would have no appreciation whatsoever.

Your man of genius does not necessarily do things easily. A Mozart may turn off finished musical gems in a sitting, whereas an even greater composer got his ideas in the rough and toiled and sweated over them until they were scarce recognizable in the polished product. Indeed, genius has been defined as "capacity for work," though this is by no means a comprehensive definition. Many people toil, but never get anywhere above the level. There must be energy, however, and our great men have, as a rule, been persons of great vigor. Our Leonardos, Michel Angelos, Tennysons, Brownings, Beethovens, Brahms, Scotts, Hugos, Carlyles, Washingtons, Napoleons, were men of immense bodily powers.

Genius has been more than once defined as "health" nor was the definition hit upon by a man especially interested in furthering hygiene. There have been unhealthy men of genius, but they would have been greater men of genius had their bodily frailties not hampered them, and they have often complained bitterly on this account. Certainly, with few exceptions, the man of genius has been immensely interested in his own health and the best essays on respect for the body and its needs were written not by medical men nor professional hygienists but, on the side, by great geniuses in other fields.

This leads around, again, to Shaw's idea that the man of genius is on another plane, a plane which has great respect for the body—for the good condition of the machine—because it is recognized by him as necessary if he is to "give effect to this extra vision" which Shaw included in his definition.

Life is indefinable, genius is indefinable, and, while they express themselves materially, they are far and away something more. The genius is truly inspired and, if so, there is some inspiration in those who can respond to, and appreciate, him in some measure. Joan of Arc was certainly inspired, and a genius, and we like Shaw's admission that there is a fountain of inspiration continually flowing in the universe which is "more obvious than electromagnetism." Such an expression is delightfully refreshing in this machine made age of ours.

ARTIFICIAL IMMUNIZATION AGAINST DISEASE

The value of vaccines and sera is still a question which requires much more clinical experience and proof. The potentialities and possibilities of the methods are immense and if brought to fruition would almost abolish disease. Prophylactic vaccination in certain specific infections is of acknowledged value while in certain other diseases it has apparently failed. In maladies of a nonspecific character the possibility of adequate protection by such methods may be considered in the terms of Scottish law as nonproved.

There is considerably greater confidence in the prophylactic rather than the therapeutic use of vaccines. In diphtheria or tetanus the passive immunization with specific serum has won a great triumph as the unique curative or prophylactic measure in the treatment of diphtheria and tetanus and leads to the hope of further success in the same direction. At a meeting of the London Association of the Medical Women's Federation held at the Elizabeth Garrett Anderson Hospital on May 13th last, Dr. Iris Fox discussed this subject at some length. She expressed her wholehearted belief in the future of artificial immunization and thought that we had here a powerful, perhaps the most powerful,

weapon against disease, but had not yet the knowledge to use it properly. For example, there was the widest variation in the doses given and the reactions arrived at. In the case of prophylactic inoculation against the enteric fevers the large initial dose was given of five hundred million Bacillus typhosus, with two hundred and fifty million each of Bacillus paratyphosus A and B. An example of a higher initial dose was the method of inoculation against pneumonia employed by Spencer Lister, who gave a first injection containing six thousand million each of four different pneumococcal strains.

Every kind of vaccine had been, and still was being, given on a large dose system in which a slight or moderate constitutional reaction was desired, and, on the other hand, in comparatively minute doses, aiming at immunization without the production of any general disturbance. Miss Fox thought, however, that there was an increasing tendency to use small doses in treatment. There was just as much difference of opinion concerning the interval between injections and the importance of the negative phase. It was difficult to determine, it might be added impossible, in our ignorance of the immunizing processes of the body. Laboratory attempts at exact measurement of immunity production had been of no more help than had vague clinical impressions as to the value of this or that proceeding. Protection against or cure of disease in the animal body was not always proportionately indicated by a high serum content of antibodies such as agglutinins. It seemed likely that specific antibody content was not the only factor in immunity, and much work and probably considerable alterations in our conception were needed before specific therapy could be properly controlled. Miss Fox dealt briefly with active immunization against diphtheria, which had passed the experimental stage and was being practised with the greatest success in America. Also with the typing of pneumococci and with the beneficial results, in the Rockefeller series of cases, of the specific antiserum in Type I cases.

Dr. Mary Cowan has been making investigations as to the rough and smooth varieties of the hemolytic streptococcus and to the possible clinical application of this work. Dr. Mary Cowan at this meeting said that from a single strain she had been able to isolate a rough and a smooth type of hemolytic streptococcus of which the smooth was virulent and the rough was not. She tried to immunize mice and rabbits, and in mice was able to give immunity by a serum produced from the rough to those infected with the smooth variety. In rabbits this was only possible in a small percentage. When using a smooth strain alone she had sixty-six per cent. of successes.

The serum of protected rabbits gave great variation in agglutinin content, some animals which had agglutinization of a very low titre lived, and others with a high titre died. No relation was found between agglutinins and useful antibodies. The progress being made towards improving methods of immunization against disease can be described as encouraging. Knowledge is lacking in certain essential points and until this knowledge is complete or more or less complete, success can be but partial. Workers are groping if not in the dark, at least in a dim light, and have a great deal of clearing away to do before full effulgence is attained. It is not definitely known as yet whether immunity against certain diseases is developed in the blood stream or in the cells of the tissue especially attacked by the causal organism.

Besredka and his collaborators affirm that it is in the cells of the tissue attacked and that therefore special methods of vaccine administration is indicated. This statement, perhaps, applies more particularly to the filterable viruses, certain groups of which evince well defined predilection for certain tissues. In any event, these are points which should be cleared up. In the efforts of research to find out means for protecting by artificial immunization a great deal may be learned by studying certain diseases of animals, which exhibit characteristics to diseases in human beings, and to this end the study of comparative pathology and comparative medicine generally is to be commended. Cooperation in research work between medical men and veterinarians seems likely to be attended by the happiest results.

MEDICAL WORK IN THE VETERANS' BUREAU

Dr. Palmer A. Potter since 1920 has, from a medical point of view, reviewed or supervised the reviewing of many thousand folders of the claimants of the U. S. Veterans' Bureau. These present a fertile field for the compilation of statistics. Stress of routine work, up to the present, has made impossible a collection of data sufficient for scientific interest. Leaving aside actual statistics, however, a number of facts have presented themselves to those who review the medical histories covering a period averaging five years. The number of cases coming under immediate observation in the district office in New York city is about one hundred and ten thousand, although the number under observation in Washington previous to decentralization in the summer of 1921 approximated eight hundred thousand.

It should be understood that the medical histories alone were observed in the majority of cases. These histories cover a period from the beginning of military service to the present and include reports of

examinations made at induction by the local draft board and at camp, the medical records during service, as noted on Form 52 and Form 55 of the Army, the examinations at discharge and the examinations made at intervals after the filing of claim for compensation. This editorial concerns only general impressions founded upon the review of many thousands of such medical histories and is not concerned with statistical data or scientific deduction.

One thing noted is the frequency with which so-called functional murmurs with no enlargement, definitely diagnosed as such at enlistment or induction, later develop into true valvular disease with definite enlargement of the heart. This is of particular interest in view of the orders issued by the Army in August 1918—as will be recalled by those who were in the service—that a murmur at the apex without enlargement did not disqualify for the service and by inference was considered neither a disease nor a disability and more or less normal in a young man. The exact reverse of this is also frequently observed. A considerable number of exservice men who carried in service a definite diagnosis of valvular heart disease and were discharged with it, and in some even because of it, show on later examinations no trace whatever of any cardiac disease. This point is being taken up and investigated in detail by one of the physicians connected with the U. S. Veterans' Bureau.

Another thing noted, particularly in Washington, where examination reports, not only from the whole country, but from all over the world, were reviewed, was the proneness of examiners to make a diagnosis of myocarditis in young men, on what seemed, on a complete review of all the evidence, to be insufficient grounds. It appears to be the belief among the profession throughout the country that myocarditis is easily diagnosed and, even in young people, of rather common occurrence. The diagnosis of an hypertrophy of the heart made on physical signs alone, is frequently not borne out by an x ray either preceding or subsequent. This is so true that the diagnosis is practically never accepted in the absence of confirmatory x ray.

The afterresults of gassing are, or were, the subject of much, and particularly newspaper, discussion. The popular impression as to these possible results differs widely from the accepted scientific conclusions. Popular opinion ascribes every possible ill to gas. Scientific conclusions, founded in large degree upon the examinations of gassed men made at the time of discharge, are that gassing leads to practically no later disability.

Those who review the subsequent histories of severely gassed cases do not agree with either of these. The impression is obtained, although as explained previously no statistics can be supplied, that men severely gassed—and by severely is meant those with a medical history of a month or more in the hospital—frequently show for one or two years after discharge the evidence of well marked persistent bronchitis, with an appreciable number developing emphysema or asthma. The Medical Division of the Chemical Warfare Service has shown that there exists no basis for the belief of relationship between gassing and pulmonary tuberculosis. This has been carefully investigated and the results appear conclusive.

Until about 1922 a considerable number of severely gassed patients showed on examination some apparently functional heart disturbance. This was noted particularly in the cases reviewed in Washington during 1921 and 1922. The irritability, tachycardia, or whatever it was, does not seem so much in evidence as time passes, judging from the cases reviewed at present. One effect of severe gassing that has not been touched upon previously is the possibility of gastric or duodenal ulcer being due to this cause. Potter has noted fifty-one cases in which this relationship appears possible, although, of course, by no means proved. All of these cases had in their Army record a history of hospitalization for gassing. During the course of this hospitalization and in some cases bearing the diagnosis coincidently at admission, severe intestinal disturbance developed. Of the many cases having a combined diagnosis of gassing and intestinal disturbance, fifty-one later developed in the course of a year or two, either gastric or duodenal ulcer, and in one case both. The diagnosis in all these cases was proved by x ray or operation. The ulcers probably would have been formed without the preceding gassing, possibly they would not. Persistent intestinal disturbance beginning, so far as the history shows, at the time of severe gassing, with a later development of gastric or duodenal ulcer, leads to the supposition that there may be some relationship between the two. The late Dr. E. A. Spitzka, who had the opportunity of reviewing many of these histories, believed, as does Dr. Potter, that between the gassings with coincident severe intestinal disturbance, and the later ulceration, there possibly may exist the relationship of cause and effect.

The frequent difficulty of the differential diagnosis between pulmonary and abdominal conditions, is, of course, generally admitted. It is particularly difficult in children to distinguish between pleurisy or pneumonia at the right base and true appendicitis. One outstanding fact noted in reviewing these many medical histories is the frequency with which cases of appendicitis or other abdominal condition later show a definite pulmonary tuberculosis. A large number

of cases of active pulmonary tuberculosis bear in their folders the report of a preceding operation for appendicitis. Frequently, with no history or complaints referable to the chest, a moderately advanced, active pulmonary tuberculosis is discovered following operation for some chronic abdominal condition. Whether the appendix was actually diseased in these cases, the history, of course, does not reveal. All that these folders show is the history of abdominal complaints, the notation as to the operation for appendicitis, followed, after a varying interval, by the diagnosis, borne out by physical findings, of active pulmonary tuberculosis.

Patients are occasionally met having a medical record in service of appendectomy, but showing a recurrence of symptoms after discharge. Eighteen cases of this kind have been found by x ray or operation to have stone in the right kidney, two cases showing the presence of calculi in the left alone. There is, of course, nothing new or startling in the knowledge of the difficulty of distinguishing between the two conditions. It is thought, however, that the realization of the comparative frequency of the possible error and of the necessity for a complete uranalysis in acute appendicitis may be of aid.

We also note the frequency of recurrence following operation on varicose veins. The histories do not show what method of operation was used. Many men now with well marked varicose veins have, on their medical history, a record of having been operated upon for that condition, either while in the service or since discharge. The impression is obtained that permanent recovery, as a result of operation for varicose veins is, to say the least, rather rare.

In this connection, an unusual case, the records of which have come under observation, is mentioned. This man was operated on for varicose veins while in service. Since discharge the varicosities have returned and now involve not only the legs but the veins of the abdomen, chest, axillæ and forehead. The liver is apparently normal in size and there is no evidence on x ray of mediastinal tumor or other source of portal obstruction.

The Veterans' Bureau has a valuable opportunity to follow the psychic effects of penetrating wounds of the skull, and one of the neuropsychiatrists connected with this service is collecting data covering this point. This article, however, is concerned only with the general impressions obtained from the review of many medical histories. The gradual unfolding of a true disease or disability with definite diagnosis and physical findings from its early beginnings and varying diagnoses and the observations of the end results of apparently unconsequential occurrences or complaints may be of interest.

THE INTESTINES

The book of anatomy, large as it is, is not yet finished. Indeed, it is stretching its binding nowadays in a lively fashion, for there seems to be no standard body, as we have been led to believe, and the variations are far more than those of the shape of a bone, the attachment of muscles or branching of bloodvessels.

John Bryant has recently published a further study of the development of the intestine which is interesting. He finds the most striking characteristic of this organ to be the extreme variation in length which is evident at birth and which begins as early as the fifth month of fetal life. In his large list of 242 cases there was an average length for the small intestine of twenty feet and nine inches; and for the colon, five feet two inches. (These measurements do not include the duodenum or rectum.) The minimum length was three metres for the small intestine and one metre for the colon, and the maximum lengths were 8.5 metres and 3.25 metres. It was pointed out by Treves some time since that the length of bowel is independent of age, height and weight, and these findings of Bryant confirm this opinion as to height and weight. Bryant found, in his cases, that at ten years of age practically all children had already attained a small intestine longer than the minimum length compatible with prolonged adult life, though they had not acquired much over half the corresponding length of colon. The small intestine is longest in relation to body length at birth and is proportionately shorter in adult life. The colon, on the other hand, increases in length and, between twenty and eighty years, becomes twenty per cent. longer.

As Bryant points out, we proceed from a carnivorous type of bowel to a vegetarian type, though whether function here makes structure, cannot be safely asserted. It would be interesting to compare changes in relative length, which may take place with increasing age in lower animals. After the tenth year the growth of the human small intestine is chiefly one of increase in calibre.

The statement has been made that people of the heavy, apoplectic type have a relatively long intestine and are therefore nourished with comparatively little food, while the slender or tuberculous type have a relatively short intestine and are difficult to keep in good flesh. Bryant's cases do not support this view. At any rate, his twenty-eight tuberculous cases had an intestine and colon of normal length. A shorter intestine and colon was, however, demonstrated in twenty-eight cases of carcinoma. The tuberculous is often a fairly good feeder, the cancerous person is not, after development of the cancer is well under

way. Is the relatively short intestine in the latter due to lack of function? Such a shortening could hardly occur in a few years. There are many interesting things yet to be learned about the food canal.

RICKETS IN AN ITALIAN DISTRICT OF NEW YORK

While the New York Association for Improving the Condition of the Poor was conducting its health campaign in the Mulberry District, it was found that fully twenty-five per cent. of the children of preschool age were suffering from serious orthopedic defects, largely the result of rickets in early infancy. In the opinion of the examining physician, Dr. Louis C. Schroeder, rickets is responsible also for a great deal of malnutrition found in children of this age group. Moreover, it is probable that the pneumonia and other respiratory diseases often attacking an alarming number of children under five in this district, are in part due to the low muscle tone and bad chest conditions following severe cases of rickets. "If these defects of early childhood and the illnesses which are likely to follow them are to be prevented, it is clear that something must be done to arrest the frightful incidence of rickets among the babies of this district," writes John C. Gebhart, director of the Department of Social Welfare of the Association for Improving the Condition of the Poor, in the *American Journal of Public Health.*

Fortunately both curative and prophylactic measures endorsed by the medical profession were available, and in 1923 the work was so organized that an intensive nursing followup for the majority of babies of this age group was provided. The work was carried on for four months and 150 cases were admitted and given careful attention. After study of records, the children were divided into three groups, according to amount of codliver oil consumed. The differences between those taking oil regularly and those who had taken it irregularly or in small quantities was so marked as to leave no doubt as to value of the oil in preventing rickets. It was impossible to trace any correlation between the feeding of the babies and the development of rickets, or to secure sufficient data to show the relation between time spent out of doors and the incidence of the disease.

The most significant contribution of the campaign was the demonstration that mothers can be induced by systematic home visiting to give codliver oil to their babies for the three winter months, and that at least seventy per cent. of such babies can be prevented from developing rickets in a district where this disorder is practically universal. The association feels also that a real beginning has been made in inducing mothers in this district to carry out prophylactic measures against rickets as a routine.

Obituary.

SELIAN NEUHOF, M.D.

Dr. Selian Neuhof, one of the country's leading cardiologists, died on October 6th, at his home in New York. He was sixty-three years of age at the time of his death. He was graduated in 1893 from the College of Physicians and Surgeons, where he specialized, as he did in his practice, on diseases of the heart. His two best known works, *The Heart,* and *Clinical Cardiology,* have been for many years standard textbooks in American medical colleges and schools. He was the writer of many articles on his specialty and related subjects and a frequent and valued contributor to the New York Medical Journal. Dr. Neuhof held many prominent positions in New York. He was formerly professor of medicine at Fordham University, visiting physician at the Central Neurological Hospital, consulting physician in cardiology at the Broad Street Hospital, and for many years associate attending physician and chief of the cardiac clinic at Lebanon Hospital. His loss will be deeply felt by the medical profession.

Dr. Neuhof is survived by his brother, Dr. Harold Neuhof, also a prominent physician and surgeon, and by his widow and two daughters.

WILLIAM HENRY B. AIKINS, M.D.

On Thursday, October 2, 1924, one of Canada's most widely known cancer specialists, Dr. William Henry B. Aikins, died from angina pectoris at his office, 134 Bloor Street, Toronto. Dr. Aikins was one of America's leading authorities on the treatment of cancer with radium. He was born in Peel County on August 22, 1859, and was graduated with the degree of M.B. from the University of Toronto, and with the degree of M.B.C.M. from Victoria University. After several years of postgraduate study in New York and various European cities, he took his licentiate in London in 1881 and the examination of the General Medical Council of the United Kingdom in 1883. Since that time he had practised in Ontario. He was active in many medical associations, eventually amalgamated into the Toronto Academy of Medicine, and was past president of this academy. He was one of the proprietors and editors of the *Canadian Practitioner,* and the author of many contributions to medical literature, particularly on his specialty. For a number of years he was a member of the consulting staff of Grace Hospital, and physician to the General Hospital. He acted also as consulting physician to the Toronto Hospital for Incurables and the King Edward Sanitarium.

Dr. Aikins had a wide acquaintance with medical men in Europe, and attended officially and as an individual many of the European conferences on medical subjects. He was one of the organizers of the American Radium Society, and one of its first presidents. He was also a member of the Ontario Medical Association, the Canadian Medical Association, and the British Medical Association, and a Fellow of the American College of Physicians. He was a member of the York Club, the Royal Canadian Yacht Club, and the Æsculapian Club. His death is a great loss to the profession as a whole.

News Items.

Nobel Prize Award.—The 1924 Nobel prize for medicine has been awarded to Professor Willem Einthoven, professor of physiology of Leyden University.

Dietetic Convention.—The American Dietetic Association held its seventh annual convention at Swampscott, Massachusetts, October 13th to 16th.

Dental Exhibit.—The Allied Dental Council will have a mouth hygiene and health exhibit in the Astor Library building of New York, from November 10th to December 5th.

Civil Service Examination.—Applications for medical officers, Junior, Grade A, and Grade B, at entrance salaries of from $1,680 to $3,000 a year, will be received until December 30, 1924, by the U. S. Civil Service Commission.

Public Lectures at New York Academy.—Seven lectures on health education and the prevention of disease, open to the public, will be given by the Medical Society of the County of New York, in cooperation with the Academy of Medicine, from October 29th to December 10th, at the Academy building.

Police and Fire Surgeons' Association.—At the recent meeting of the Police and Fire Surgeons' and Medical Directors of Civil Service Commission, held in New York, Dr. Harry M. Archer, honorary surgeon of the New York Fire Department, was elected president, Dr. J. J. Wyeth, secretary, and Dr. F. M. Banta, treasurer.

Harvey Society Lectures.—Dr. William Snow Miller, professor of anatomy, University of Wisconsin, delivered the second Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, October 25, 1924. His subject was "A Study of the Normal and Pathological Histology of the Lung."

Professor A. V. Hill, E.R.S., professor of physiology, University College of London, will deliver the third Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, November 5, 1924. His subject will be "The recovery process after muscular exercise in man."

New Clinic.—The new Hospital for Deformities, New York, has received through the generosity of a friend a donation of $5,000 for the establishment of a complete bronchoscopic clinic for direct laryngoscopy, bronchoscopy and esophagoscopy. The clinic will be under the direction of Dr. M. Joseph Mandelbaum. Announcement of the opening of this department for the reception of patients will be made later.

Alvarenga Prize.—The College of Physicians of Philadelphia announces that the Alvarenga prize for 1924 has been awarded to Dr. Gordon Cameron, Victoria, Australia, for his essay entitled "Pancreatic Anomalies; Their Morphology, Pathology, and Clinical History." Essays for the 1925 contest must be received by May 1st, and may be written on any medical subject. Details may be learned from Dr. John H. Girvin, of 19 South Twenty-second Street, Philadelphia.

Five O'Clock Lectures at the Postgraduate.—November lectures have been announced as follows by the Postgraduate Medical School and Hospital, to be given Wednesday afternoons at five o'clock. All practitioners of medicine are invited. November 5th: Dr. Harbeck Halsted, "The Toxemias of Pregnancy"; November 12th: Dr. Fred H. Albee, "Rehabilitation Surgery"; November 19th: Dr. Linnaeus E. LaFetra, "Meningitis—Diagnosis and Treatment"; November 26th: Dr. Ludwig Kast, "The Treatment of Colitis."

Personal.—Dr. Shepherd Ivory Franz, of St. Elizabeth's Hospital, Washington, D. C., and the George Washington University School of Medicine, has resigned and is to become a member of the department of psychology of the University of California.

Dr. David Felberbaum, of New York, has removed his offices to 320 West Eighty-ninth Street.

Dr. Benjamin Schwartz, of New York, has been appointed visiting physician at St. Mark's Hospital.

Dr. E. C. Levy has retired as director of public welfare of Richmond, Virginia, to be succeeded by Dr. W. Brownley Foster.

Dr. Laura Ida McLaughlin, formerly research worker at the University of Chicago, has joined the staff of the Bureau of Home Economics of the U. S. Department of Agriculture.

Medicinal Use of Alcohol.—The city council of DeKalb, Illinois, has enacted an ordinance prohibiting the filling of prescriptions of medicinal liquor unless the mixture is so compounded as not to produce intoxication; intoxicating liquor must be furnished directly by the physician to the patient under his care. The physicians of the city have appealed to the state association for assistance in securing repeal of the ordinance.

American College of Surgeons.—At the recent clinical congress of the American College of Surgeons, held in New York, the following officers were elected, to be installed at the 1925 congress: President, Dr. Rudolph Matas of New Orleans; first vice-president, Dr. Eugene Hillhouse Pool; second vice-president, Dr. John Sinclair McEachern, Calgary, Alberta.

The following were elected to the Board of Regents, their terms expiring in 1927:

Dr. George W. Crile, Cleveland; Dr. Robert B. Greenough, Boston; Dr. Allen B. Kanavel, Chicago; Dr. John G. Clark, Philadelphia, and Dr. George Henry Murphy, Halifax, N. S.

Hospital Administration Conferences. — The New York Postgraduate Medical School and Hospital is holding a series of conferences on hospital administration, open to all who are interested. The November 7th meeting will be on "Necessity for closer Cooperation Between Architects, Hospital Boards and the Nursing Profession in Relation to the Construction of Hospitals for the Purpose of Facilitating Nursing Service," led by Alice Shepard Gilman, R. N. The November 14th meeting will cover "Establishing and Maintaining Proper Relations Between Hospitals and Medical Schools," an address by Dr. Charles H. Young. The last meeting, on "Higher Education in the Nursing Profession," will be led by Annie W. Goodrich, R. N.

Research and Scholarship Funds.—Funds for a research fellowship in preventive medicine for two years have been provided for the University of Chicago by an anonymous donor.

Five scholarships at the University of Maryland, medical department, have been provided in the will of the late Dr. Clarence Warfield. A scholarship in this department has also been provided for by a gift from Miss Eleanor S. Cohen.

A legacy from the late William F. Milton, yielding an income of about $50,000, has been received by Harvard University. If not desired for a library building, the fund may be used for special investigations, including medical subjects.

The University of Colorado has received the sum of $5,000 and is assured an income of $1,000 a year, for the purchase of books on medical research, by the generosity of Mrs. Charles Denison, of Denver.

Columbia University announces a donation of $15,000 from the Borden Company for research in food chemistry and nutrition and $6,000 from an anonymous donor for the surgical research laboratory.

Resolutions.—The following resolution was adopted by the Yorkville Medical Society on the death of Dr. Selian Neuhof:

WHEREAS, Our late colleague, ex-president and friend, Dr. Selian Neuhof, who has departed from our midst, and

WHEREAS, During his entire professional career devoted himself intensely to scientific research and contributed materially to the advancement of medical science, and

WHEREAS, He has given his valuable time and services unstintingly to the development, growth and scientific advancement of the Yorkville Medical Society, and

WHEREAS, In the course of the manifold activities on behalf of the Yorkville Medical Society, he also officiated as the presiding officer with marked distinction and great tact, Therefore be it

Resolved, That the Yorkville Medical Society deeply mourns its regrettable loss, and be it resolved that these sentiments be expressed upon the minutes of the Yorkville Medical Society, that they be published in the medical journals and a copy thereof be sent to his family.

A. KAHN, M.D., *President.*
I. GLASSMAN, M.D., *Secretary.*

At a special meeting of the Board of Surgeons of the New York Eye and Ear Infirmary, held on October 24, 1924, the following resolution was unanimously adopted on the death of Dr. Charles E. Perkins:

Resolved, That the Board of Surgeons of the New York Eye and Ear Infirmary records with profound sorrow the death of its late colleague, Dr. Charles E. Perkins, who has faithfully served the Infirmary for the past eighteen years. The Board of Surgeons extends to the bereaved widow and family its sincerest sympathy.

E. B. DENCH, M.D., *Chairman.*
ROBT. LEWIS, M.D., *Secretary.*

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

London, *September 24, 1924.*

HEALTH IN ENGLAND AND WALES

Sir George Newman, chief medical adviser to the Ministry of Health, has just issued a masterly memorandum on the national health. Of course it is a truism to state that sanitary science has practically extinguished some diseases and greatly checked the ravages of others, until the death rate of England and Wales is the lowest recorded. With regard to the preventive treatment of the individual, education is needed and reforms of a drastic nature required. For example, thousands of women die annually in childbirth for lack of proper care and precautions. Much of this maternal mortality and sickness could be prevented, yet only a small proportion of the seven hundred thousand mothers who give birth to children every year submit themselves to antenatal supervision. The death rate of infants, although lower by far than formerly, is still too high. Since the establishment of schools for mothers, of maternity and infant welfare centres, and of other educational agencies for assisting mothers in their maternal duty, the infant mortality rate in England and Wales has fallen by fifty per cent.

One of the great causes of sickness, perhaps, on the whole, the greatest in England and Wales, as in other countries, is digestive disturbances, frequently due to errors of diet. Knowledge of food values and the needs of the body is lacking, with the result that much money is spent on unsuitable food, while many valuable and cheap foods are entirely neglected. Only by teaching individuals what, when and how to cook and eat can this be overcome. Meals should be regular and restful occasions.

Disease of the respiratory tract is one of the commonest causes of sickness in England and Wales, and diseases in this group are one of the chief causes of death. Neglect of the common cold and behaviour which insures its direct transmission to others, are widespread and habitual. People suffering from colds breathe, sneeze, and cough in other people's faces, careless or ignorant of the fact that they are highly infectious.

The commoner infectious diseases, such as measles, diphtheria, scarlet fever, smallpox, whooping cough, tuberculosis, and venereal disease, bring about a devastating amount of disability and death. These are spread almost entirely by contact with infectious persons. People must be taught that diphtheria germs do not live in drains, but in throats, and may be conveyed to others by the sick, by contact. They must be taught that it may be dangerous deliberately to allow young children to become infected with measles, whooping cough, or scarlet fever, that relatively minor diseases may prove mortal if not adequately treated and properly nursed; that tuberculosis is not necessarily hereditary, and therefore predestined, but is the result of personal infection or drinking tuberculous milk.

It is pointed out that it is usual to attribute the present day prevalence of nervous and mental troubles to the rush and worry of modern life. Psychologists tell us, however, that although urban conditions may be contributory causes, the predisposition to the trouble may arise quite early in life, often in infancy.

THE DANGERS OF DYED FURS

A report by Dr. Allan C. Parsons on the results of an inquiry concerning cases of dermatitis caused by the wearing of fur collared garments has been issued recently by the Ministry of Health. The subject attracted attention first in the winter of 1922-23, when cases were reported frequently in London and throughout the country generally. Though the malady in question is not in most cases of serious import, the symptoms in some cases were severe, and in any event the rash is disfiguring and uncomfortable. The furs concerned were of a cheap variety made from rabbit skins dyed to resemble coney and known as "beaver coney." They are used as cheap ornamental additions to coats and mantles, and take the form of collars and cuffs. According to the Fur Trade Association these furs are exclusively produced and dyed in foreign countries, notably in Belgium, France, Germany, and the United States. Aniline dyes are used in the preparation of the furs, and examination of specimens proved that the skin troubles are due in particular to the employment of paraphenylenediamine and metaphenylenediamene. It is necessary with both these dyes to employ an oxidizing agent, such as peroxide of hydrogen, and if oxidation is complete the dyed article is innocuous. In many of the furs under suspicion, however, the oxidation process has not been completed but arrested, at a stage where actively irritant bodies are produced. The conclusion arrived at therefore is that defective or careless technic in the use of potentially dangerous dyes is, in all probability, the cause of fur dermatitis, and the hope is expressed that effective measures will be taken by the trade to remedy these conditions.

COTTON SPINNERS' CANCER

Recently several cases of cotton spinners' cancer have been reported. Notably a case of epithelioma of the scrotum from which a spinner had died, an account of which was given in the *Lancet*, August 16th last. This was a test case a county court decision having been given that the disease was excited by reason of the nature of his employment and therefore fell within the scope of industrial diseases under the Workmen's Compensation Act. The Operative Cotton Spinners' Amalgamation have decided to accept the decision. According to the operatives' secretary, there are one hundred cases of cancer on his books awaiting decision. Owing to the publicity which has been given the case much is hoped for in the direction of prevention of the disease. The council of the Amalgamated Association of Operative Cotton Spinners and Twiners express the opinion that no worthier field in which to work can be found than for medical scientific men by investigation to attempt to banish this disease from all connection with cotton spinning. It is further suggested that the trade itself in conjunction with the medical profession, might investigate the cancer producing properties of mineral oil and direct their efforts to the production of an oil innocent of such properties, or, at least, to the provision of improvement of preventive measures.

NEW BOOK

An extraordinarily original book has been written by Mr. J. E. R. McDonagh, F.R.C.S., surgeon, London Lock Hospitals, late Hunterian Professor, Royal College of Surgeons of England, and published by William Heinemann (Medical Books), London. This work, termed the *Nature of Disease,* simply teems with original views and moreover, proofs in support of these views are brought forward in large numbers.

It is a book calculated in a very high degree to stimulate the imagination, as its main theme is the revolutionary argument that all diseases proceed from one cause, the loss of the electrons from the protective particles of the blood, that is, a successful attempt on the part of the invading organism to extract from the protective particles of the blood their free electricity. Recovery is the reversal of this process, the recapture from the invading organism of this electricity.

LETTER FROM VIENNA

(From our own correspondent)

VIENNA, *August 20, 1924.*

EFFECTS OF PROLONGED TOBACCO SMOKING

At a recent meeting of the medical society, Dr. Wisselbach read a paper on the effects of prolonged tobacco smoking. He stated that tobacco smoke contained nicotianin, collidine and other pyridine derivatives, such as acids, resins, carbon dioxide, hydrocyanic acid and ammoniacal salts, as well as the nicotine. Two drops of nicotine placed on a dog's tongue produced great weakness, convulsions, and death in less than a minute. Eight drops were sufficient to kill a horse. Tobacco contained from two to eight per cent. nicotine, and M. le Bon, a French investigator, has determined that although this was changed in smoking, still it was converted in other pyridine products, which were just as poisonous. Dr. Wisselbach found that the bodies did not condense to any appreciable extent in the mouth, and were for the most part exhaled so that the physiological effect of ordinary smoking was nil. Susceptible persons, however, might be affected by breathing the air in which there was much tobacco smoke.

The action of nicotine has been shown by the investigations of Petit to be intermediate between that of the bromides and digitalis. It soothes the nerve system, but causes a powerful and rapid contraction of the vessels and a rise in blood pressure. One of its best known dangers is angina pectoris, caused perhaps by the severe contractions of the coronary arteries. Prolonged use induces the development of arteriosclerosis. Tobacco is a habit drug like opium, cocaine and alcohol; its devotees, although aware of its harm, lose the force of will necessary to break the habit. Tobacco smoke has apparently no bactericidal action on any microorganisms present in the lungs. One of the first effects of an overdose is nausea. Prolonged smoking has been proved to be a distinct factor in the production of digestive troubles.

INCREASE OF LENGTH OF LIFE OF ROUMANIAN WOMEN

The detailed statistical results of the last census, published at the end of last month, have been discussed by various medical men from different points of view. A noted gynecologist has examined the data available for comparing the duration of life of men and women, and concludes that women live longer than men. The average lifetime of the Roumanian women, according to the census taken in 1910, was 42.8 years, but according to the last census it is now fifty-one years. In some parts of Roumania the improvement is still greater. For instance, in the Székely district in Transylvania the average is 56.6 years. According to this gynecologist the longevity of women is due to the fact that women work less than men, and are less liable to industrial and other accidents. The data of the last census show that there are fewer hysterical and nervous women than in other countries. Insanity has also decreased slightly. These favorable results are for the most part due to the general improvement of the standards of life in recent years. Wages in Roumania have been increased considerably during the latter years in agriculture, trade and manufacturing.

NEARSIGHTEDNESS OF VIENNA SCHOOL CHILDREN

Dr. Wiljeim, in his account of the examination of two hundred textbooks from a sanitary point of view, draws particular attention to the fact, already established by many prominent investigators, that nearsightedness in children either originates or develops in connection with the schoolroom. The chief cause is the too prolonged reading, writing and drawing in which visual accommodation, as well as convergence, is greatly fatigued. Undue strain of the muscles of accommodation causes an active hyperemia; the venous circulation is hindered, there is an increase in the intraocular pressure and the sclerotic is gradually stretched. Too strong convergence works even greater harm. It is, of course, understood that in some children nearsightedness is hereditary, and as a result, they become affected more quickly than their healthier comrades. In addition, nearsightedness may be the result of insufficient light and improper equipment on desks and other school furniture.

Dr. Wiljeim insists that the paper used in the textbooks should not have a glossy surface. Under artificial light a glossy surface causes improper focusing of the eye and necessitates frequent changes in the position of the book as well as of the head. The paper should be thick enough to prevent the printing on one page penetrating to another. A few authorities have recommended yellow paper, but the majority favor white paper, which gives a better contrast between the printed matter and the background.

DIABETES AND PREGNANCY

Dr. Elischer, of Budapest, says that if diabetes occurs in a woman of child bearing age, it usually suppresses menstruation and often produces atrophy of the uterus. In some cases, however, menstruation continues; such patients may become pregnant. Since diabetes in young subjects is of a more severe

type, those diabetic women who are still capable of becoming pregnant exhibit a dangerous form of this disease. Pregnancy aggravates it and hastens its progress. If diabetes becomes associated with pregnancy, viz., if a pregnant woman becomes diabetic, the prognosis is more favorable, because the diabetes usually subsides after confinement. The effects of diabetes upon pregnancy and the puerperium are extremely deleterious. In about two thirds of the cases intrauterine death of the child was observed. Hydramnios is a frequent complication. During the lyingin death may supervene in the same manner as after operation, with the symptoms of coma and collapse. The obstetrical management of diabetes with pregnancy is a difficult problem. Dr. Elischer believes that the termination of pregnancy, and that, too, at the earliest possible date, is the only course which can logically be followed.

SODIUM SULPHITE A DANGEROUS FOOD PRESERVATIVE

A series of experiments to determine the effects of the habitual use of sodium sulphite in the food were performed in dogs and other animals in the Vienna physiological laboratory of the university. The results, although not quite new, are valuable from the viewpoint of public hygiene, considering the large amount of this substance used as a food preservative Ten dogs were under observation, two being controls and receiving the same weight of untreated meat, as was done several years ago by Dr. Harrington in the United States. These dogs were fed upon freshly hashed beef, to which was added fifteen to twenty per cent. of pure crystallized sodium sulphite. From the start all ten animals gained in weight, but about the seventh week all except the control dogs begun to lose. At no time did any of the animals show any outward evidence of poisoning up to three months, when some slight manifestations of poisoning appeared. In the fifth month all animals were killed. On section the macroscopic appearances were negative in all respects, but microscopical examination showed a parenchymatous degeneration of the kidneys. Each showed marked fatty degeneration of the renal epithelium, and in one case there was an acute interstitial hepatitis in addition to and probably dependent upon parenchymatous changes. The control dogs showed no changes whatever. The conclusion is drawn that at least for dogs, and probably for human subjects too, sodium sulphite is a dangerous admixture to food.

LATIN AMERICA LETTER

(*From our own correspondent*)

Balboa Heights, *September 15, 1924.*

QUARANTINE AGAINST SALVADOR ON ACCOUNT YELLOW FEVER

Surgeon C. P. Knight, Chief Quarantine Officer of the Panama Canal, has recently issued an embargo on all nonimmune passengers and members of the crew of ships arriving at the Canal ports which have touched the ports of Salvador. This quarantine is the result of yellow fever at San Salvador. The order includes all passengers not immune to yellow fever from all Salvadorian ports and also from the port of Amapala, Honduras, which lies just across the Bay from La Union, Salvador. All such passengers arriving at the Canal will be placed in quarantine for the period totaling six days from ports of departure. Certification by ship's surgeons giving daily temperature readings of passengers who have embarked from the above mentioned ports will be required. Steamship companies have been advised to allow no landing of transit passengers in the ports of Salvador.

The prevalence of yellow fever in San Salvador, while not alarming, is of such an extent that every precaution must be used to protect the Canal Zone. Some weeks ago Dr. Knight made an investigation of conditions in Salvador and in his report to the Governor of the Canal strongly recommended that further intensive studies be made in order to determine the foci of infection. At present Dr. Henry Hansen of the International Health Board is at San Salvador studying the outbreak. Frequent reports are received from him relative to current conditions. To date there has been reported forty-one cases with five deaths. This is the first outbreak in Central America for a number of years.

PANAMA'S NEW HOSPITAL DEDICATED

Panama's new $3,000,000 hospital known as the Santo Tomas Hospital was recently dedicated by Dr. Belisario Porras, President of the Republic of Panama. About four thousand persons attended the ceremony, who massed around the main entrance in an endeavor to listen to the speeches delivered by the President and other notables of Panama. Bronze medals commemorative of the occasion and descriptive booklets were distributed among the guests. The medals bore the bust of the President while on the reverse side a general view of the hospital which today is the most beautiful structure in Panama and perhaps the most costly in the entire Republic. Immediately after the ceremony the new hospital was thrown open to the public for inspection. A reception took place upon the second floor of the main building.

The old hospital was evacuated recently, all the patients and staff being transferred to the new hospital. The old Santo Tomas which was a landmark of the city of Panama for many years is now a thing of the past. The new hospital is pleasantly situated in the Exposition Grounds and overlooks the Grand Gulf of Panama. The buildings are imposing, being constructed of cement with stucco finish and are entirely fireproof. In front of the hospital in the spacious grounds is the statue of Bolivar.

CANAL ZONE HEALTH DEPARTMENT INCREASES FUNCTIONS

Col. W. P. Chamberlain, Chief Health Officer of the Canal Zone, announced recently the inauguration of increased activities in the Health Department especially in reference to child hygiene. While there has always been close contact between the health department and the public schools in supervising the health of the school children, nothing on an extensive scale has heretofore been attempted. Dr. C. P. Knight, Chief Quarantine Officer, who previous to coming to the Canal Zone was engaged in organizing divisions of child welfare in some of the

Western States, will assume the task of organizing the new activities in the health department of the Canal Zone.

Dr. W. P. Cox of Ancon Hospital has for the past year been conducting health centres in different parts of the Zone for the benefit of mothers, infants and children of preschool age. This has been mostly volunteer work but has been helpful to employees' families. The results expected from the increased activities are: Further reduction in the death rate among expectant mothers and infants; raising the standard of health among children of the preschool and school age groups; control of communicable disease through routine inspection, thereby improving the daily average attendance. Miss Katherine Luby, an experienced public health nurse who has specialized in child hygiene for the past six years in the States, has just arrived on the Isthmus and has been assigned to these activities.

IMPROVEMENT MADE IN GARBAGE DISPOSAL

A vast improvement in garbage disposal of the Canal Zone and Panama has recently been made which has proved both a great saving in economical administration and further reduction in fly breeding. The Zone and Panama use the burial system in disposal. Heretofore quantities of larvacide composed of a resin soap emulsion of crude carbolic acid was sprayed on the top of the burial ground as a fly larvæ exterminator. The cost of this in material alone amounted to $100 a month. Experiments have shown that ordinary crude oil does the work more efficiently and at a saving of $80 a month in material. It is also shown that the oil is a much more efficient larvacide. Since the adoption of this method fly breeding has been practically stopped both at the garbage dump and also the manure dump. It is extremely rare to see a fly in any house in the Canal Zone, due to the efficient methods of garbage and manure disposal.

NOTED SCIENTIST ARRIVES ON ISTHMUS

Dr. W. J. Berg, professor of entomology of the University of Arkansas has recently arrived at the Canal Zone, where he will proceed to Barro Colorado Island, the Government Experimental Research Station, for the purpose of an extensive study of the effects of venom stings on the human body of such insects as the tarantula, scorpion, centipede and numerous other alleged poisonous creatures. Professor Baerg is going to allow these insects of the tropics to sting him and scientifically note the physiological reactions upon his own body. He has performed similar experiments in the States with such insects and does not believe that the tropical varieties are any more poisonous than those of the States. Dr. Baerg stated that "There is a small black spider with red markings found in all tropical and temperate regions which is poisonous. There is no evidence in scientific literature that the tarantula or centipede of the tropics is poisonous."

ISTHMIAN CANAL ZONE MEDICAL ASSOCIATION MEETING

During the month of August a special meeting of the Isthmian Canal Zone Medical Association was held at the Century Club in Panama in honor of the distinguished men who visited the Canal following the conference on tropical medicine at Kingston, Jamaica. Practically all the physicians of the Canal Zone and of Colon and Panama attended this meeting and had the pleasure of listening to many addresses by the noted group of medical men.

The following noted medical men were on the program: Dr. F. G. Banting, of Toronto, Sir Arthur Newholsme, of London, Dr. Arthur Patterson of Kenya, East Africa, Assistant Surgeon General Henry R. Carter, U. S. Public Health Service, Professor M. J. Roseneau of Harvard.

CHANGES IN MEDICAL STAFF OF CANAL ZONE

The following changes are made in the Medical Force of the Canal Zone Health Department: Dr. Iril C. Bedwell resigned, effective September 30, 1924. Dr. Otto C. Kostall resigned, effective September 30, 1924. Major William A. Murphy, leave of absence for two months, October 1, 1924. Captain Julius Newgard, accompanying Boy Scouts on their annual encampment to Chiriqui, Panama.

NEW CHIEF HEALTH OFFICER FOR CANAL ZONE

Assigned by the Surgeon General of the Army and appointed by the Governor of the Canal Zone, Col. Weston P. Chamberlain, M. C. U. S. A., arrived at the Canal Zone on the transport St. Mihiel, June 18, 1924, to assume the duties of chief health officer. Previously to his assignment to the Canal Zone, Colonel Chamberlain was on duty in Washington, D. C., as Commandant of the Army Medical School. He relieves Col. Henry C. Fisher, who has been chief health officer for the past five years, while Colonel Fisher is being assigned to the post just vacated by Colonel Chamberlain. Throughout the efficient administration of the former chief health officer, great economy in matters of sanitation and mosquito control has been effected. Officials and employees of the Canal greatly regret the departure of Colonel Fisher, whose kindly demeanor toward all has been appreciated.

YELLOW FEVER EXPERT LEAVES FOR THE STATES

Dr. Henry Hanson of the International Health Board arrived in Panama on June 7th en route to the United States. Dr. Hanson is the director of the campaign against yellow fever in the Republic of Colombia. His mission to the States is a sad one as he is accompanying the body of his wife, who died here six months ago. Dr. Hanson reports that the control of yellow fever with its attending mosquito eradication is progressing satisfactorily. In his latest report he recommends a policy of watchful waiting. His specific recommendations to the International Health Board are:

1. A series of surveys should be made in the largest and most important towns, making a stegomyia index;
2. Vital statistics should be thoroughly examined for any recent undue number of deaths from fevers, Bright's Disease or infectious jaundice;
3. Venezuela should be visited, especially the Maracaibo basin. This appears to be the only likely source of reinfection for Columbia;
4. It appears desirable that the work done in Venezuela should be under the same general direction as that in Colombia as the two countries form practically one and the same focus.

The length of time for the continuation of the work in Colombia depends more upon the conditions in adjacent countries than it does upon Colombia.

By the end of the year 1924, Colombia could safely be left to itself, provided that there is no menace from neighboring countries.

Beside the campaign in yellow fever, Dr. Hanson has been making exhaustive studies in relapsing fever. He brought with him specimens of ticks for experimental study. These studies are now being conducted at the Ancon Hospital laboratory by the entomologist of Dr. Hanson's staff, to determine the natural infectivity of ticks in relapsing fever. Results of these investigations should have an important bearing on the future control of the disease.

MEDICAL STAFF ADDITIONS AND TRANSFERS

During the past month Major T. J. Leary, M. C. U. S. A., has been relieved as superintendent of the Colon Hospital and assigned to duty in the United States. Major Thomas S. Mebane has been appointed superintendent in his place, effective June 23, 1924. The following officers of the Medical Corps of the Army have recently been assigned to duty with the Health Department: Capt. Paul G. Capps, Capt. Thomas H. Steward and Capt. William W. Conger. These officers are expected on the next transport to reach the Canal. Dr. Otto A. Kestal has been appointed physician with the Health Department. Dr. Kestal has just completed one year's satisfactory internship in the Ancon Hospital.

PERU PASSES RESOLUTIONS AFFECTING QUARANTINE PROCEDURE

As a direct result of the Conference of Maritime Quarantine Authorities of the West Coast of South America held last February in Panama, the Peruvian Government has passed the following resolution:

Whereas: The Panama Canal with its terminal ports of Colon and Balboa are under one sanitary jurisdiction; and

Whereas: The recent Panama Sanitary Conference asked by special vote that the sanitary unity of the Canal be recognized; therefore be it

Resolved: That vessels stopping at Colon and Balboa will only need one bill of health for their being admitted in Peruvian ports.

Be it registered, communicated and published.

Seal of the President of the Republic. Medina.

Peru has the honor of being the first country to modify regulations governing quarantine as a result of the above mentioned conference. As an economic measure, this modification is of particular interest to the shipping interests.

YELLOW FEVER IN SALVADOR

It is reported that one death and several cases of supposed yellow fever have occurred in Salvador during the past week. Because of the reputed existence of this disease, and as a precautionary measure to the Canal Zone, the Governor has ordered Dr. C. P. Knight, chief quarantine officer, to proceed to Salvador for consultation with the Salvador authorities relative to the situation. If the existence of yellow fever is proved, it will be the first appearance of the dread disease for a long period. Active campaigns have practically wiped it out of Central American countries and the greater part of South America. The last case of yellow fever appeared in Panama in 1905, in Ecuador in 1919, in Mexico and Colombia, 1923. In the event that yellow fever is discovered, the Canal Zone will necessarily quarantine against ports in Salvador.

STUDIES IN MOSQUITO CONTROL

A recent paper by Dr. D. P. Curry, assistant chief health officer of the Panama Canal, describes the mosquitos of the Canal Zone, especially the Anopheles, and their control. He demonstrated that by field identification of the larvæ, using a portable microscope, a sanitary inspector is enabled rapidly to determine the breeding places of dangerous or annoying species of mosquitos, to locate the source of flights into neighboring settlements, and to direct with precision and economy efforts at their control. Of the eighteen genera and 135 species identified here, but few have proved dangerous or especially annoying. Of the ten species of Anopheles, but two, A. Albimanus, and A. Albimanus variety Tarsimaculata, are believed to be of great economic importance in transmitting malaria, and control work, especially over distances greater than half a mile from protected centres, should be directed chiefly against them. Recent studies seem to indicate that on the Atlantic side of the Isthmus, flights of this species are invading the terminal cities over a distance of three miles or more, much of it over the open water of Limon Bay.

Letters to the Editor.

BLOOD SEDIMENTATION

Detroit, *September 6, 1924.*

To the Editor:

Dr. M. E. Alexander's article on "Clinical and Experimental Observations on Blood Sedimentation," appearing in the June 4th number of your Journal, was called to my attention recently. Having been associated with Dr. Bernhard Friedlaender in the preparation of his article on the subject in the *American Journal of Obstetrics and Gynecology*, Vol. VII, No. 2, February, 1924, I was very much interested in Dr. Alexander's work.

I should like Dr. Alexander to compare his work with ours. I note that he considers a sedimentation time of one hour normal. You will see that we have established from the study of a large number of cases that 1,000 to 1,200 minutes is the normal time. We consider a sedimentation time of less than three hours distinctly pathological.

In pregnancy the sedimentation time varies very definitely according to the length of gestation as is shown clearly in Friedlaender's article, and not "averaging twenty minutes," as Alexander states.

I am very pleased, however, to note that the work on sedimentation time is being appreciated elsewhere in this country.

Emil D. Rothmann, M.D.

ITALIAN EMIGRATION SERVICE

New York, *September 19, 1924.*

To the Editor:

According to a correspondence from Washington, published in the issue of your paper of May 7, 1924, it would seem that it is only lately that Italy has established homes for emigrants at Naples, Genoa, Trieste, and Bardonecchia for the purpose of selecting and cleansing the emigrant before sailing. This presumed awakening in the field of emigration is

also supposed to be the outgrowth in Italy of a system installed in the last four years in Europe by Dr. Hugh S. Cumming, Surgeon General of the United States Public Health Service.

Now, with all due regard for the excellent work done by Dr. Cumming, it seems to me that the above statement should be modified. The Italian Government, through the general bureau of emigration, organized in 1901 a complete service of sanitary inspection, aid, and selection of emigrants, and since 1902 has detailed a physician as Royal Commissioner to every transatlantic steamer, to look after the welfare and hygiene of the emigrants during their voyage. And since 1910 a medical officer of the Royal Navy has been permanently stationed in New York to act in cooperation with Ellis Island in all questions relating to immigrants from Italy.

It was also in 1910 that in the port of Naples was established a special home with all conveniences for bathing and cleansing and for a complete sanitary supervision and selection of emigrants. After the war a similar institution was opened in Trieste. The only home that can be considered new is the one of Bardonecchia, near the borders of France, opened only last year on account of the increased Italian emigration into France.

It is not that only lately the Italian Emigration Service has been organized, but rather that only recently competent American authorities have interested themselves in this matter and gone to inspect it. And it is to the credit of Italy, that all these inspections have resulted in warm commendation of the work done by the Italian Emigration Bureau.

CARLO SAVINI, M.D.

THE TITLE OF DOCTOR

NEW YORK, *September 14, 1924.*

To the Editor:

A whole line of citizens have taken upon themselves the care of the health of the individual and the family, and have appropriated the title of "doctor." Types of "doctors" have multiplied beyond the telling. Selfstyled "doctors of chiropody"; "doctors of chiropractic"; "doctors" of health; even "doctors" of laboratory health; not to speak of the "doctors" of the seventy cults recently listed by one health board. The populace at large enjoys these cults and faddists, and attends their sessions, calls upon them for services requiring some knowledge of the human mechanisms. As long as the socalled doctor does not actually use the knife or prescribe through ordinary druggists, he is safe and within his rights as a citizen who has assumed as his patriotic duty the care of the health of the individual and his family. Let diphtheria rage through the community; let the enlarged breast be rich in cancer and not in fat; let the malalignment of the vertebræ be tuberculous, what matters—The drugless healers must go on!

At whose threshold should all this be laid? Very recently in our State, an attempt was made to register physicians annually (at a fee, of course) and then to have the machinery set up to investigate unlicensed and illegal practitioners. It was not possible to get the doctors to agree on the utility of this legislation. It seemed that it was penalizing the innocent to reach into the maelstrom of the guilty. The physician is already burdened by fees and taxes. He pays for his medical student certificate with which he enters medical school. He pays for the privilege of taking and passing the examinations licensing him to practise medicine and surgery; he pays to register in the county in which he practises; he pays for the privilege of prescribing narcotics to patients in pain (for a while he paid both a State and Federal tax). The physician is permitted to prescribe alcohol, and to purchase it for office use, although how and why no fee was attached to this nuisance is not understood. So perhaps it is no wonder that it was not possible to get physicians to agree on giving themselves another tax, another set of papers to fill out annually, and another number to add to the growing list each of us has.

It occurred to me that honest doctors can change many things without more laws and more numbers. Suppose we agree that instead of a door plate or window sign which reads, Doctor Jones or as some will have it, J. Jones, M.D., we have our signs read:

John Johns, M.D.
Licensed to Practise Medicine and
Surgery in This State.

If all who may honestly do so, take this means of informing the world at large that the provisions of the State law of their community have been satisfied, it will put the outcast where he deserves to be—beyond the pale. The objections to making public one's privilege legally to carry on the profession of physician and surgeon cannot be strong. No physician objects to having his narcotic license number printed on his prescription blank. No physician can object to having his license and county certificate in his office consulting room. Putting oneself on record makes the illegal practitioner either quit or perjure himself!

The protection once afforded by the title of doctor to the health seeker has become a spider web. Let us take the matter up; let us be honest; even if it entails a larger placard over our door bell, or two lines instead of one on our letter head.

HERMAN GOODMAN, M.D.

ALCOHOL AND CARBOLIC ACID

VANCOUVER, CANADA, *October 10, 1924.*

To the Editor:

Dr. Tweddell's letter regarding carbolic acid as an antidote for alcoholic poisoning (MEDICAL JOURNAL AND RECORD, October 1st, page 353) reminds me of an incident. I was searching for a satisfactory antiseptic to use in gastric lavage, and among other things I tried ten drops of a mixture of equal parts of alcohol and carbolic acid, dissolved in two quarts of hot water. The patient did not faint but respiration ceased, the muscles relaxed completely and she became unconscious. Her chair was tipped immediately to lower her head, and in a minute or two she had recovered. Next day the same dose was used on a strong man, with a similar result. Since then I have carefully avoided using alcohol as an antidote for carbolic acid internally. Glycerine is just as efficient, and no bad results follow. If a patient has just swallowed alcohol I would not give carbolic acid. After the alcohol has been absorbed it may be safe to do so.

T. PROCTOR HALL, M. D.

Book Reviews

SKIN DISEASES

Handbook of Skin Diseases. By Frederick Gardiner, M.D., B. Sc. (Public Health), F.R.S.C.E., F.R.S.E. Second Edition. New York: William Wood & Co.; Edinburgh: E. S. Livingstone, 1924.

In the second edition of his handbook on skin diseases, the author has written a creditable and certainly readable little volume. The purpose of the book is avowedly to present the diagnosis and treatment of the more common diseases of the skin. Some of the less common diseases are also included and their descriptions have necessarily been rather meagre and unsatisfactory.

There is a good deal of up to date information and sound common sense, interspersed with frequent references to personal experiences, some of them derived from service in the recent war. In his attempt to be up to date the author follows the questionable practice of dropping the word eczema and using the word dermatitis in its place. On the other hand in discussing pompholyx (dyshidrosis) at some length he fails to mention the fact, which is generally recognized, that many cases, if not a majority, are simply examples of ringworm infection. Like many European writers the author seems wedded to the use of ichthyol, a drug whose vaunted usefulness has of late been seriously questioned.

The writer's experience with tuberculosis of the skin, so much more common in Europe than America, has helped him to write an excellent chapter on this perplexing subject.

The book is of octavo size, containing 246 pages. There are forty-six black and white illustrations of rather mediocre value, and twelve excellent colored plates made from wax models. The paper, printing and general appearance of the book are all that could be desired.

X RAY MANUAL

Manual of Practical X Ray Work. By John Muir, B. Sc., M.B., Ch.B., in collaboration with Sir Archibald Reid, K.B.E., C.M.G., L.R.C.P., and F. J. Barlow, B. Sc., F. Inst. P., A.R.C.Sc. With 456 Illustrations. Being a third edition of the manual by Arthur and Muir. New York: Paul F. Hoeber, Inc., 1924. Pp. 524.

It is a pleasure to give unqualified endorsement to this volume as a guide to the use of the x ray in diagnosis. He describes the stereoscope as employed for two plates which have been taken with the x ray tube shifted the distance that separates the human eyes. The two pictures are seen combined in one with perfect perspective and increased diagnostic value.

A similar effect is produced by standing about six feet away from plates set side by side and holding at arms length between the eyes and the plates a piece of cardboard, having in its centre a rectangular aperture about two by one and a half inches. The card must be adjusted till with the left eye closed the right eye sees the left hand picture framed by the aperture and the left eye similarly sees the right hand picture. On opening both eyes and looking fixedly at the aperture the two pictures will coalesce.

Radiology now being a necessary subject for British medical students, its use by them has been kept specially in view and it is admirably adapted for use as a textbook. The value of the book to the general practitioner lies in its excellent chapters on diagnosis.

The description of x ray apparatus and technic is complete. There is an excellent special chapter on diagnosis of the alimentary system. The book is not intended as a guide to the therapeutic use of the röntgen ray.

EYE DISEASES

Diseases of the Eye. A Handbook of Ophthalmic Practice for Students and Practitioners. By George E. de Schweinitz, M.D., LL.D., Professor of Ophthalmology in the University of Pennsylvania. Tenth Edition, Reset. With 434 illustrations and 7 colored plates. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 865.

Manual of Diseases of the Eye. For Students and General Practitioners. By Charles H. May, M.D. Director and Visiting Surgeon, Eye Service, Bellevue Hospital, New York. Eleventh Edition, Revised. With 374 illustrations, Including 23 Plates with 73 Colored Figures. New York: William Wood and Company, 1924. Pp. iv-445.

The tenth edition of de Schweinitz's deservedly popular textbook of ophthalmology has been most thoroughly revised and brought up to the very last minute, as it were. It thus embodies in its contents, along with the revised and rearranged material from previous editions, everything of recent date that has been sifted and found of real value to the practising ophthalmologist. A great deal of the latter material has not as yet found its way into any of the extant textbooks, and the "predigested" treatment by the author of such subjects as Gullstrand's diaphragm lamp, contact illumination, ophthalmoscopy with red free light, Barraquer's method of extraction of cataract by suction, O'Connor's "cinch" shortening operation, etc., not only places the reader *au courant* with the advance of ophthalmology, but obviates the necessity of hunting for them through periodical literature and transactions of various medical societies.

It would be work of supererogation to pick out any portion of the book for special praise, but the chapters on refraction, diseases of the cornea, glaucoma, cataract, and sinus diseases in their relations to the eye, have particularly impressed the reviewer with the conciseness of their contents, lucidity of style, and preciseness of expression.

The make up of the book as to print, paper and illustrations, is of the high order we have grown accustomed to expect from the publishers of this volume.

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The eleventh edition of May's well known manual fully justifies the popular esteem in which it has been held by the profession since its first successful launching in 1900. The author, indeed, solved the problem of presenting to the general practitioner an excellent compilation of all that is essential and practically important in ophthalmology, in a lucid and easily intelligible style, supplemented by numerous illustrations, plates and colored figures that still further help in elucidating the contents of the text. The edition has been thoroughly revised and

brought up to date, every page having been carefully gone over by the author. The work occupies a unique position as probably one of "the best medical sellers," and this distinction it has acquired exclusively by its own merits which render it indispensable to every general practitioner into whose hands fall many eye cases before they come within the ken of the specialist.

BOTANY

The Pharmacist's Botany. By George B. Rigg, Ph. D., Associate Professor of Botany, University of Washington. New York and London: The Macmillan Company, 1924.

Botany and medicine have been intimates from the days of the primitive medicine man to the present. All of the ancient physicians and many of the moderns have been keenly interested in this branch of natural history and have derived from their observations much pleasure and profit.

As a subject for the premedical curriculum it should not be neglected and it is with pleasure that we commend this manual, which although primarily devoted to the needs of pharmacy students nevertheless will prove of service to the student of medicine.

THE CANCER PROBLEM

El Problema del Cancer. Por William Seaman Bainbridge, A.M., Sc.D., M.D., C.M., LL.D. Apendice: La Terapeutica Fisica de las Neoplasias Malignas. Por el doctor Vicente Carulla Riera. Barcelona: Cervantes, 1924. Pp. 646.

This is an annotated translation of the third English edition of Bainbridge's work with an appendix by Vicente Carulla Riera, Chief of the Physical Therapeutic Service of the Faculty of Medicine of Barcelona, on *Physical Therapy in Malignant Neoplasms.* Malignant disease is taken up from every possible angle including the historical and zoological, and the plates and illustrations of the English edition are retained in the Spanish translation. The bibliography is remarkably complete and there is an index of authors as well as of publications, which is a feature where American treatises usually excel. The book is of interest, not only from the importance of the subject but from the high standing of the author as an able writer on medical subjects and from his wide surgical experience.

The paper, impression and binding are better than the usual run of European medical works and its Spanish text will serve to bring it to the profession not only of Spain but also of the rapidly growing and progressive republics of the Western Hemisphere in whose language it is written.

SURGERY

Dictionary of Treatment. Including Medical and Surgical Therapeutics. By Sir William Whitla, M.D., D. Sc., M.P. Seventh Edition. New York: Paul F. Hoeber, Inc., 1924. Pp. 1100.

The object of this book is a worthy one and there are many valuable suggestions for treatment, but the attempt is made to cover too much territory, for instance, to advise the treatment, in a book of this character, of such things as cataract, symblepharon, and clubfoot. No space is lost in introducing a subject, and the treatment advised is direct and brief and mostly commendable, but surgical advice so briefly given can be of but little value. One regrets the author's impartiality in recommending many treatments for diseased conditions in order to cover a large number of undigested recommendations. One would wish he had more frequently given his approval or disapproval of a treatment.

It is impossible carefully to review this book which is almost an encyclopedia of suggestions for the treatment of everything from gunshot wounds to abortion, from corns to cheiropompholyx, and from epistaxis to epispadias.

The treatment of many diseased conditions is thoroughly and well discussed, but the author, with his long practical and clinical experience, could well abstract the book to half its size, which would not detract from, but rather increase its value.

FRACTURES AND DISLOCATIONS

Dislocations and Joint Fractures. By Frederic J. Cotton, M.D. Second Edition. With 1393 Illustrations from Drawings by Author. Philadelphia and London: W. B. Saunders Company, 1924. Pp. 745.

Cotton has a pleasing style and the ability to forcefully express his opinions and methods of treatment. The book is well illustrated with drawings, x ray reproductions and photographs. He takes up the different portions of the skeleton in a very systematic manner, dealing first with dislocations and then fractures.

It is obvious from a study of this work that Cotton is not a great believer in the traction method of treating fractures. No notice was made in the fracture of the surgical neck of the humerus of traction and external rotation, which the reviewer believes often gives better results, as it prevents the contraction of the lower portion of the capsule. In clavicle fractures one is surprised to see that there is no mention made of the cross splint, recently developed, which tends to give a better type of union. As a whole the book is satisfactory and gives a comprehensive study of fractures about joints and dislocations.

BIOCHEMISTRY

Handbuch der Biochemie Des Menschen und Der Tierce. Auflage 2; Lieferung 5-10, 14 und 15. Edited by Dr. Carl Oppenheimer. Jena: Gustav Fischer. 1923 and 1924.

Parts 14 and 15 of the well known Oppenheimer *Handbuch der Biochemie* have just appeared, the preface being dated April 24th, and a footnote is appended to a number of the articles stating that the revision has been brought down to March 18, 1924. There is no especial change in the form from the first edition. While the very elaborate bibliography does contain many references to the German work up to 1924, some of the most important American chemical papers are not referred to. There is, however, a good deal of variation between the different authors, as is inevitable in a handbook of this kind. For example, the article on Animal Ferments by the editor is extremely good, and it contains an abstract of almost all of the recent important American work. Other sections are but little changed from the first edition. Despite these irregularities these numbers give promise that the completed text will remain as a great source book for information on biochemical matters. Parts 5 to 10 date from 1923.

HIGH ALTITUDES AND TUBERCULOSIS

Das Hochgebirgsklima. Physiologische Einflüsse, Indikationen und Kontraindikationen. (Erfolge und Dauerresultate bei Tuberkulose-Erkrankung.) Von Dr. O. Amrein, Chefarzt des Sanatoriums Altein, Arosa. Arosa: F. Junginger-Hefti, 1922. Pp. 40.

In this monograph the value of the climate of high altitudes in the treatment of tuberculosis is emphasized. After discussing the physiological effects of residence at a high altitude on the various vital organs of the body, the author dilates upon the indications and contraindications and also the temporary and permanent results of high altitude therapy in tuberculosis of the different organs. This is an excellent treatise and well worth reading as the value of this form of treatment is constantly gaining recognition. The bibliography is extensive.

HOME TREATMENT OF TUBERCULOSIS

Domiciliary Treatment of Pulmonary Tuberculosis. By F. Rufenacht Walters, M.D., M.R.C.P. Second Edition. New York: William Wood & Co., 1924. Pp. 288.

This is the second edition of a very useful work, the first edition having had quite a large circulation in England as well as in the United States. The book, although intended for the medical profession, is written in language comprehensible by the intelligent layman. The first chapter is devoted to the etiology of the disease, followed by a review of the well known diagnostic signs and symptoms. The author wisely insists upon a study of the home conditions before consent is given for the patient to remain at home and install treatment there. He makes an interesting statement which might be taken to heart by all phthisiotherapeutists prior to giving a definite prognosis. It is as follows: "It has been often asserted that the chances of recovery depend on early diagnosis; but although this is true, it is not the whole truth. There are many cases which will do badly even if discovered early, and others which, though discovered after a long time, yet make a good recovery."

Of sea voyages as a means to cure tuberculosis, the author does not speak too favorably and he strongly condemns this method of travel for advanced cases. In his chapter on climate, he does not advance anything that is not known and practised every day by up to date phthisiotherapeutists. In the chapter on open air he maintains that the effect in hyperventilated rooms is equal to that in an outdoor shelter. It is very gratifying to see the author emphasizing the fact that there is no danger of contracting tuberculosis from a consumptive individual even at home if the necessary precautions are taken.

In the chapter on diet the following sentence might well be remembered by physicians as well as patients: "A patient's own idea as to the amount of food he needs is not trustworthy; it may indicate what he can easily digest, but not what his body should get. The appetite is no guide to the digestive capacity of the stomach, as shown by the success of Debove's method of *suralimentation* by means of an esophageal tube." In the reviewer's experience it is not necessary to demonstrate this maxim by the Debove method. Urging the patient to eat regularly, even if the appetite is wanting, suffices in the majority of cases.

In the chapter on specific remedies Dr. Walters devotes considerable space to the use of tuberculin in its various forms without committing himself to any one particularly, but concerning the use of tuberculin in general he says: "Since many slight cases get well under hygienic treatment alone, and many cases are not suitable for tuberculin treatment, it is more especially in the slowly progressing groups that the treatment is indicated, i.e., those who cease to make progress under hygienic conditions, or who get relapses." Besides mentioning the various tuberculins, he also devotes some pages to the description of Marmorek's, Maragliano's, and Bruschettini's sera and Spengler's I. K. treatment.

Under general remedies the usual drugs, such as creosotes, styracol, thyocol, benzosol, phenols, etc., are mentioned and doses given. A description is also given of the iodine group and arsenical remedies. The remaining chapters are devoted to family life, the care of children, and aftercare of the patient. A diet list is appended to the volume.

Taken as a whole, this second edition is more complete and up to date than the first, and it is well worth a careful perusal by all interested in the treatment of the tuberculous. The value of the book would have been materially increased had the author seen fit to illustrate some of the numerous devices, such as outdoor tents, home sleeping porches, window tents, etc., which so much facilitate the sanatorium treatment at home, or as the author chooses to call it, "domiciliary treatment."

MEDICINE

Ergebnisse der gesamten Medizin. Unter Mitwirkung hervorragender Fachgelehrten, herausgegeben von Prof. Dr. Th. Brugsch, Oberarzt der II. med. Klinik der Charité in Berlin. Fünfter Band. Heft 1, mit 12 Abbildungen im Text und 12 Kurven, 1923. Heft 2, mit 10 Abbildungen im Text und 6 Kurven. Hefte 3 und 4, mit 29 Abbildungen im. Text. Berlin und Wien: Urban & Schwarzenburg, 1924.

In the first part Franz M. Groedel thoroughly analyzes the theoretical basis of the action of carbonic acid baths in circulatory disturbances and also the proper technic of the treatment in the various types of disorders. Ludwig Hofbauer explains the nosological significance of apical catarrh and hilus disease of the lungs, asserting that only functional tests can give definite information regarding the proper etiologic functional therapy. Otto Schmidt writes about mastitis and the most recent methods of treating it. Gottwald Schwarz discusses the röntgenotherapy of exophthalmic goitre. Emil Bürgi describes the narcotics, dividing them into the fatty series (true narcotics), opium alkaloids, scopolamine and the solanaceæ bromides, cannabis indica, etc. Pluriglandular insufficiency is discussed by Leo Borchardt and he divides these cases into the thyrotesticulohypophyseosuprarenal and the thyrosexual types. He also discusses pluriglandular insufficiency as part of the disease picture of other conditions, such as infantilism, cretinism and hypophyseal tumor with pluriglandular insufficiency. Hans Elsner writes about the present state of gastroscopy, its technic and indications and the diagnosis of cancer and ulcer of the stomach. He also describes his own instrument. K. Fahrenkamp discusses hypertension—the arterial increase in blood pressure—as a symptom and its treatment.

In part two there is an article by Walter Wolff on the latent causes of fever. Rudolf Degkwitz discusses immunobiology and the immunobiological methods in diagnosis, prophylaxis and therapy of the infectious diseases of children. Arvo Ylppö is assigned the subject of icterus neonatorum. Arnold Durig discusses the application of the principle of division of labor (called in America the Taylor system) to the practice of medicine. D. Kulenkampff discusses the subject of trigeminal neuralgia in a most comprehensive manner. Carl Bachem describes various remedies recently introduced into therapeutic practice in Germany.

In the third and fourth sections a chapter on the latest drugs is concluded. W. Cimbal writes about the neuroses of the mental struggle, in which he differentiates between neuroses, nervousness, neurasthenia and hysteria. S. Isaac deals with the changes induced in diabetic therapy as a result of the introduction of insulin. The operative treatment of trachoma is discussed by A. Peters. Life insurance medicine is taken up by L. Feilchenfeld. The chapter on metabolic movement, distribution and changes, which gives a somewhat different aspect to metabolism from that usually considered, is written by W. Arnoldi.

The use of caramel in the treatment of diabetes is discussed by E. Grafe. W. Weitz discusses the importance of heredity in the causation of disease. S. G. Zondek writes about the fundamental principles of calcium therapy. Syphilis in the child is discussed by E. Müller. Bronchial asthma is taken up by W. Schultz. Denker and Nühsmann write about pharyngeal sepsis.

CHEMICAL ANALYSIS OF THE BLOOD

Handbuch der biologischen Arbeitsmethoden. Abt. IV. Angewandte chemische und physikalische Methoden, Teil 3, Heft 3. Edited by Dr. Emil Alderhalden. Berlin und Wien: Urban and Schwarzenberg, 1923.

This portion of Abderhalden's *Handbuch* deals with the chemical analysis of the blood, covering both the organic and inorganic constituents. It is well up to date, and unlike some of the other numbers, it refers very largely to the chemical methods which have been developed recently in this country. It forms a useful laboratory reference book on the subject.

LABORATORY METHODS

Guide Pratique d'Analyses de Chimie Biologique. By René Clogne. Paris: Librairie Le Francois, 1924.

This second edition of René Clogne's book is a useful collection of laboratory methods for those who read French with more facility than English. It is interesting to note that Clogne follows the method of attack chosen by American writers of such guides, that is, the description of each procedure is considered under the heading of, first, principle; second, necessary apparatus and reagents, and third, technic, following which the normal values are given. The methods chosen are clearly described. This edition contains a new chapter on the chemical methods of water analysis, and one on the detection in the urine of arsenic, cacodylates, bromides and iodides, chlorates, mercury, salicylic acid and its derivatives, and so forth.

STEKEL

Nervöse Angstzustände und Ihre Behandlung. Von Dr. Wilhelm Stekel. Vierte, Vermehrte und Verbesserte Auflage. Berlin und Wien: Urban und Schwarzenberg, 1924. Pp. 685.

Stekel is a voluminous writer. He has ideas—some original, some quite radical. He is always worth reading for he gives one food for thought. His spirit is to be admired. Though he at times seems flighty, one can always find a juicy kernel in the hasty turning over he has given his material. Orthodox analysts shout anathema, yet make use of much he has to offer. One must separate the chaff from the grain. Yet one cannot in truth deny that Stekel has a flair for this sort of thing. Anyone who is sincerely interested in the psychoneuroses and the most modern form of therapy will do well to read Stekel's work.

MEDICINE FOR THE LAYMAN

National Health Series. In Twenty Volumes. New York and London: Funk & Wagnalls Company, 1924.

The best way to give an idea of the value of this practical little series, prepared for supplying the layman with the basic facts of medicine and personal hygiene, is to give a list of the subjects covered by the set, and the names of the authorities who have contributed the discussions. The list follows:

Man and the Microbe: How Communicable Diseases Are Controlled, by C. E. A. Winslow, professor of public health in Yale Medical School; The Baby's Health, by Richard A. Bolt, M.D., director of the medical service of the American Child Health Association; Personal Hygiene; the Rules of Right Living, by Allan J. McLaughlin, M.D., Surgeon, United States Public Health Service; Community Health; How to Obtain and Preserve It, by Donald B. Armstrong, M.D., executive officer of the National Health Council; Cancer; Nature, Diagnosis and Cure, by Francis Carter Wood, M.D., director of the Institute for Cancer Research at Columbia University; The Human Machine; How the Body Functions, by W. H. Howell, M.D., associate director of the School of Hygiene and Public Health at Johns Hopkins University; The Young Child's Health, by Henry L. K. Shaw, M.D., professor of diseases of children at Albany Medical College; The Child in School; Care of Its Health, by Thomas D. Wood, M.D., professor of physical education at Teachers College, Columbia University; Tuberculosis; Nature, Treatment and Prevention, by Linsly R. Williams, M.D., managing director of the National Tuberculosis Association; The Quest for Health; Where It Is and Who Can Help Secure It, by James A. Tobey, M.S., administrative secretary of the National Health Council; Love and Marriage; Normal Sex Relations, by T. W. Galloway, Ph.D., associate director of educational measures of the American Social Hygiene Association; Food for Health's Sake; What to Eat, by Lucy H. Gillett, M.A., superintendent of nutrition, New York Association for Improving the Condition of the Poor; Health of the Worker; How to Safeguard It, by Lee K. Frankel, Ph.D., chairman of the National Council; Exercises for Health, by Lenna L. Means, M.D., medical director of the Women's Foundation for Health; Venereal Diseases; Their Medical, Nursing and Community Aspects, by W. F. Snow, M.D., general director of the

American Social Hygiene Association; Your Mind and You, by Frankwood E. Williams, M.D., medical director of the National Committee for Mental Hygiene; Taking Care of Your Heart, by T. Stuart Hart, M.D., president of the Association for the Prevention and Relief of Heart Disease; The Expectant Mother; Care of Her Health, by R. L. DeNormandie, specialist of Boston; Home Care of the Sick, by Clara D. Noyes, R.N., director of nursing, American Red Cross; and Adolescence; Educational and Hygienic Problems, by Maurice A. Bigelow, Ph.D., professor of biology and director of the School of Practical Arts, Teachers College, Columbia University.

Such an array of authorities in their special fields is sufficient to testify to the character of the treatment of the subject matter in the twenty little volumes. Any physician would do well to recommend these practical little books to his patients for information along both general and particular lines.

COSMOPOLITANISM IN THE MIDWEST

The Tattooed Countess. A Romantic Novel with a Happy Ending. By Carl Van Vechten. New York: Alfred A. Knopf, 1924. Pp. 286

One suffers from a variety of reactions in laying down this book, a mixture of rage and humility. We are baffled by the author's intentions.

The fashions of the nineties in Maple Valley, Ia., are minutely described. French novels had this town enthralled. It repressed and thoroughly submerged them in its unconscious. But they have a way of flaring out in the behavior of even the most modest, so that after all, nothing is astonishing in this ordinary book.

In the character of Gareth Johns, the boy seducer, or victim—we cannot be certain which he is—there is something grim and pitiful. He buys his way to freedom more studiously than any prostitute. He will use women everywhere, without pity, selfishly, as he has used his mother, whose life is the price of his permission to go to college. We can see no future for him. As for the tattoed countess, she will only be a little older, a little more jaded, but no wiser! Altogether such a regressive tale that we wonder how it ever came to be born.

FEMALE CHARACTERS IN WAGNER

Women Characters in Richard Wagner. By Louise Brink, Ph.D. Nervous and Mental Disease Monograph Series No. 37. New York and Washington: Nervous and Mental Disease Publishing Company, 1924. Pp. 125.

Psychoanalysis has been employed in a most scholarly fashion to interpret the actions of the varied female characters in Wagner. A most suitable selection this has been, for in no other author who comes to mind have so many types of womanhood been portrayed. From childhood to old age, in all their perplexing situations, their plans, hopes, love life, and disappointments, we follow the trail. Attachments to family members, the severance of the bond, the taking up of new relationships, new goals—all these are covered. So keenly has Wagner identified himself with the versatile characters that valid conscious and unconscious conflicts are covered with meticulous precision. We are fortunate in having so careful a worker as Dr. Brink essay the task and do it so thoroughly. To many readers this book will prove a real treat; to others, a revelation and an inspiration to carry the worker to wider fields.

Medicoliterary Notes.

At last we have a literary review that is really literary and that really reviews! It is called *"Books:* a weekly review of contemporary literature," and is issued with the Sunday edition of the New York *Herald Tribune.* Stuart Pratt Sherman, formerly professor of English at the University of Illinois, is the editor. All reviews of any length are signed and are written by authorities on the subjects covered by the books. Although *Books* is only a few weeks old, it has contained already a number of excellent reviews and criticisms of works on scientific subjects, including medicine and psychology. Among these have been a review and criticism by Dr. James Ewing of J. Ellis Barker's book on *Cancer,* another by Alexander Goldenweiser of Fritz Wittels' recent work on *Sigmund Freud, His Personality, His Teaching and His School;* and a series of articles on Sir William Osler as a bibliophile. One of the most useful columns of this new publication is entitled *Books of the Week,* a classified list of current works with a line or two of pertinent descriptive annotation.

* * *

The *Nation's Health* for September contains an interesting article by Alice Ravenhill, Fellow of the Royal Sanitary Institute, on *The Human Machine, How to Multiply Human Energy,* with a view to lessening the needless and futile expenditure of energy in many households which leads to ill health and general inefficiency. The writer has estimated that in inconveniently arranged homes the service of three meals a day to a family of six represents a total weekly load of one and a third tons; that the distance covered in the preparation of single light meal is about 127 yards; and that stair climbing in a week is equivalent to the ascent of a three thousand foot mountain.

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One of the books of the month is *Little Novels of Sicily,* a translation by D. H. Lawrence of some of the best short stories by Giovanni Verga, published by Thomas Seltzer.

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The State Boards of Health of Massachusetts and Connecticut have brought about the passing of a law requiring that no dealer shall sell clinical thermometers within the borders of those states without a seal engraved on each thermometer, the use of the seal being granted after the examination of a number of samples and revoked if thermometers are found bearing it and varying from specified conditions. Other states would do well to follow this example, for physicians have in recent years found marked carelessness in the manufacturing and standardizing of many makes of clinical thermometers.

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Half a million readers have delighted in *Bob, Son of Battle.* Probably not one per cent. knew the author was a sick-room prisoner when he wrote it. Alfred Ollivant injured his spine in a riding accident just after being graduated from Woolwich with a commission in the Royal Artillery. He spent fourteen years flat on his back. At the same time he was writing himself into fame. He's just finished a novel, *Devil Dare.—Books, Herald Tribune.*

* * *

The *International Book Review* for September is a number of unusual interest. Benvenuto Cellini Enlivens Manhattan is the title of an article by Chester T. Crowell describing how he came to appreciate Cellini by reading him in Macdougal Street; Percy A. Hutchinson tells us about Joseph Conrad, Alchemist of the Sea; Roselle Montgomery writes of Sheila Kaye-Smith In and Out of Fiction; and Clifford Smyth in an editorial entitled A Dying and a Living Art laments the deterioration of the "colyumist" in the daily papers. Admitting that the daily column had originally high standards of literary excellence, the writer feels that now it has drifted into a sort of artificial decadence that must ultimately bring about its own extinction. "After

all," he says, "How can one be spontaneously witty, genuinely clever, all day and every day, without resorting finally to expedients that make spontaneity impossible."

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The Canadian Council on Child Welfare has issued a chart showing the child labor laws of the various provinces, with their bearing on related problems, such as compulsory school attendance, educational requirements for children engaged in or entering employment, minimum age for factory workers and those in shops and office buildings, prohibition of night work, and kinds of labor in which children may engage.

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A Berlin newspaper reports that the mortality rate of children in that city was doubled between the years 1914 and 1918. Out of 885,000 children, 30,000 were found to be tuberculous, and 80,000 otherwise diseased, while 130,000 were suffering from malnutrition.

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A recent article on the new socalled synthetic lumber describes it as primarily the poor man's home building material; it is cheaper than natural lumber, and weighs only one fourth as much as pine, so can be transported with much less expense. It is an almost complete insulator of heat and cold, and a sound deadener.

* * *

A recent report from Washington shows that the month of August marks the peak of automobile accidents at grade crossings. In 1921, 229 persons were killed and 512 injured; in 1922, 213 were killed and 535 injured. During the whole year of 1923, 2,263 persons were killed and 570 injured in such accidents.

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The *Atlantic* for September contains an interesting contribution by a writer who signs himself "90," entitled Ferguson Rex. It is a study of the presentday student in college, who, the writer admits, has his faults, but he finds these less pronounced than the corresponding ones of his prototype of the '90's.

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For the first time since 1920 a drop has been registered in mortality from alcoholism, as shown by the figures for mortality experience for the first quarter of 1924.

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The two literary personalities at present arousing the greatest interest in France seem to be the late Raymond Radiguet, poet and novelist of note at seventeen, whose last novel, *Le Bal du Comte d'Orgel*, a study in psychology, promises to sustain the reputation made by his first, *Le Diable au Corps*, a realistic study of precocious love; and Arthur Rimbaud, poet, drunkard, explorer, soldier, and commercial agent, who wrote some of the most beautiful poetry ever produced in France before he was nineteen years old, and then renounced literature.

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A committee of New York City members of the American Association of Social Workers drew up a scheme for coordinating New York City social and welfare work which won the $1,000 prize offered by *Better Times*. The prize money will be spent in establishing the proposed central welfare council, which will have citywide functional divisions on health, child welfare, recreation, neighborhood activities, delinquency, and industrial welfare.

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Among recent publications of interest (nonfiction) are *The Criminal as a Human Being*, by George S. Dougherty, former Deputy Commissioner and chief of detectives of the New York Police Department, taken from the official files and from memory (Appleton); *Straws and Prayer Books*, by James Branch Cabell, comments and reflections, philosophical and otherwise (McBride); *Scientific Research and Human Welfare*, by Franklin S. Harris, an outline of the progress of medicine and social hygiene during the last century (Macmillan); *The Conduct of Life*, by Benedetto Croce (Harcourt, Brace); *Racial Realities in Europe*, by Lothrop Stoddard (Scribner); *A Century of Work for Animals*, by Edward G. Fairholme and Wesley Pain, a history of the work of the Royal Society for the Prevention of Cruelty to Animals (Dutton); *Colloid Chemistry*, by Jerome Alexander (Van Nostrand); *The Inner Discipline*, by C. Baudouin and A. Lestchinsky, a discussion of "the new psychology" (Holt); *How to Keep Well*, by Dr. A. F. Currier (Century); *Economics of Fatigue and Rest*, by P. Sargent Florence, a study of labor in industry (Holt); *Yourself and Your Body*, by Dr. Wilfred T. Grenfell (Scribner); and *Parents and Sex Education*, by B. C. Gruenberg (American Social Hygiene Association).

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In the recently uncovered buried city of Leptis Magna, an ancient Roman metropolis in the desert of Northern Africa, one of the most important finds from an artistic and historical point of view was a statue of Æsculapius, the Father of Medicine.

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The National Child Labor Committee has recently published an interesting little book called *Poems of Child Labor*. These are not limited to any period or type, but all deal with the topic in hand. Among authors to be found in the collection are Elizabeth Barrett Browning, Robert Frost, and Arthur Guiterman.

* * *

Beginning September 30th, the New York City Department of Health opened an extension institute in industrial hygiene for nurses at Fordham University. All registered nurses are eligible. The course is an outgrowth of the large attendance at the lectures on industrial hygiene for nurses given at the university during 1921 and 1922.

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A mental hygiene survey of Wyoming made at the request of the Governor and with the participation of the Division on Mental Deficiency of the National Committee for Mental Hygiene has recently been completed.

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Muirhead Bone, the well known British etcher and painter who was during the war an official artist on the Western Front, has an interesting article in the Manchester *Guardian* for August 6th on *Joseph Conrad—A Modern Ulysses*, which he concludes with the statement that "centuries may come and go before anyone so gifted, so strange, and such a charming human being as Joseph Conrad comes this way again."

* * *

In a recent report of the Department of Commerce it is stated that on January 1, 1923, there were 893,679 persons confined in Federal, State, city, county, and private institutions for defectives, hospitals for mentally diseased, institutions for feebleminded and epileptics, homes for adults and dependent or neglected children, institutions for juvenile delinquents, penal institutions, and almshouses. The report shows that, in addition, 4,973,032 patients were treated in hospitals during 1922, and there were 21,621,761 visits of patients for treatment in dispensaries.

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The London *Times* has recently been running a series of articles on the Isles of Greece by Sir Arthur Shipley, who is well known also for his works on natural history. In one of these articles he tells of a visit to Crete, and emphasizes the fact that, Epimenides and St. Paul to the contrary, the Cretans "lied no more than any other people we came across, and they are an abstemious and thrifty folk." In confirmation of this statement, he tells us that, during the war, huge quantities of coal were thrown into the sea from the many battleships stationed there, and that the Cretans, being thrifty if not mechanical, retrieved this treasure by hitching a large octopus to a rope and lowering it over the coal deposits. As soon as the octopus had clutched bottom with its tentacles, it was hoisted to the surface again and relieved of the tightly clasped lumps of coal. This coal heaving process was repeated until the supply was exhausted.

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There's an automobile for every 3.2 persons in the State, but too often the .2 person is the driver.—*San Diego Union.*

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Every day the world's facilities improve for transmitting intelligence, but the intelligence doesn't seem to keep pace wth the facilities.—*Columbia Record.*

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A recent significant publication of the University of Chicago Press is the volume entitled *Origins of Sociology*, by Dr. Albion Woodbury Small, professor of sociology at the University of Chicago.

Abstracts from Current Literature

FRACTURES AND DISLOCATIONS

Fractures of Elbow Joint.—E. L. Gilcreest (*Surgery, Gynecology and Obstetrics,* October, 1923) says that as structure is subservient to function, it is only natural to presume that the maximum return of usefulness in a limb would be brought about by the exact reconstruction of the deformed bone, but as perfect reduction is not infrequently impossible or inexpedient, the chief aim should always be complete restoration of function.

For the treatment of fractures in the vicinity of the elbow joint, with the exception of fracture of the olecranon process, the fully flexed position offers the best results. Often a splint is unnecessary, the forearm being strapped to the upper arm and fixed to the chest with a bandage. The advantages of the flexed elbow position are: I. It gives the most complete anatomical reposition of fragments and the best fixation. 2. It favors the retention of the more important flexion function of the joint. 3. It cooperates with gravity in the subsequent restoration of function. In correcting the initial deformity the following procedures should be carried out: 1. Strong traction is exerted on the forearm with the elbow fully extended and supinated. 2. At the same time the joint is manipulated, the displacement being corrected as far as possible; usually the upper fragment is displaced forward and the lower backward. 3. While maintaining No. 1 and No. 2, the elbow is slowly but firmly flexed to an acute angle and so fixed with the forearm supinated.

As to how long this position of acute flexion should be maintained, of course, will depend somewhat on the case, but usually after about two weeks the forearm can be lowered a few degrees every four or five days. This should be continued until the arm can be fully extended.

In conclusion the author calls attention to the serious complications which may ensue from failure to reduce fragments by traction and flexion in a first operation. A satisfactory result is attained only when, after the fracture is healed, the range of motion is sufficient to bring the hand to the mouth in flexion and to place it in the trousers' pocket in extension.

Fractures of the Elbow.—C. W. Cutler and H. W. Cave (*Surgery, Gynecology and Obstetrics,* May, 1924) discuss the diagnosis and the different types of elbow fractures. They report on several cases in which every effort was made to produce and maintain hyperflexion after reduction, the advantages of this method of treatment being as follows: 1. By this position the tendency of the forearm when extended to press backward the distal fragment is done away with. 2. The tendinous expansion of the triceps is put on tension and acts as a firm splint or sling in holding the reduced fragments in place. 3. In fractures above the condyles the periosteum is stripped up above the line of fracture. If not restored to its normal position by hyperflexion, this may lead to callus formation which will subsequently embarrass function. 4. A certain amount of stiffness is bound to follow these fractures, because of injury to soft parts and extravasation of blood and effusion in the joint. If, at the start, flexion is assured, the more useful functions of the arm are maintained. Subsequent mobilization in the range of extension is more easy and is aided by the rational forces of gravity and the relatively strong pull of the triceps.

A New Splint for Fracture of Humerus.—C. R. Steinke (*Surgery, Gynecology and Obstetrics,* June, 1924) says that this splint is applicable for fractures of the humerus and clavicle in the newborn. The splint is permeable to the x ray, and seems to meet most of the requirements for the proper reduction and retention of the fragments. The curved wire is covered with muslin or cheesecloth to support the head. The inside measurement is six and a quarter inches across. The lateral arm piece is adjustable as to length and angulation of the arm with the body. It may be adjusted for the right or left arm. The two perforations in the upright piece at the outer end of the extension are for the attachment of a windlass; or a rubber banjo type of extension may be employed. The arm extension is eleven inches in length when it is closed up and thirteen inches long when it is extended, and is one and three quarter inches wide. The body piece is also adjustable as to length, being six and a half inches long through its centre when closed up and eight and a half inches when the extension piece is drawn out. The width of the body piece is three and three quarter inches at the narrowest point and four and a half inches at the widest.

The infant is bandaged to the body piece and the extension is applied to the arm. Coaptation splints are used at the point of fracture in the humerus. The fragments can be adjusted under the fluoroscope and when they are in good position the body and arm of the infant, along with the splint, are encased in plaster of Paris. This allows for easy handling and caring for the baby who can be placed at the mother's breast without inconvenience. The infant's toilet is easily and safely cared for as there is little danger of displacing the fragments after the plaster is employed. The method is applicable in bad fractures of the clavicle.

The Skate in Lower Extremity Fractures.—R. M. Yergason (*Surgery, Gynecology and Obstetrics,* April, 1924) says that maintenance of the foot in proper position is a problem invariably present in fractures of the lower extremity. With compound, comminuted fractures near the ankle and open splint methods of treatment the problem is particularly difficult. To meet the varying requirements of different cases, splints and traction methods, a skate has been devised, which, when properly attached to the foot with celluloid, allows leverage as well as traction to be applied with all the effectiveness and none of the dangers of the heel pin or the Finochietto stirrup. The skate will hold the foot in any position or combination of positions, with or without motion, with none or with any method of traction desired and in splints the side bars of which are either round or flat. The author hopes that the skate will prove as valuable to others as it has to him.

Complete Outward Dislocation of the Patella.—N. Winslow (*Annals of Surgery,* March, 1924) comments upon the rarity of this complication. He gives a detailed anatomical explanation of its rarity, and offers the following methods of treatment: In recent cases a closed reduction with or without anesthesia is generally feasible. When such efforts fail an open replacement must be made. This can be done either by a straight or a curved incision. Habitual luxation has been cured by nonoperative treatment, but usually requires an operation. Bajardi has accomplished a cure by cutting out of the inner side of the capsule an oval slice of redundant tissue and suturing the margin of the defect, thus created, together. Le Dentu has obtained satisfactory results by reefing the relaxed capsule. Albee splits up the front of the condyle and elevates the fragment until a wedge shaped hiatus is formed into which he inserts a chunk of bone cut from the tibia, holding the graft in place with a pin. In some instances it has been found necessary to chisel off the tubercle of the tibia and transplant it upwards. While these methods, either alone or in combination, generally suffice to effect a cure, on occasions some more complicated technic needs to be exploited. Whenever a rent is found in the capsular ligament, be it in a fresh dislocation or in a recurrent displacement, the hole must be sewed up, regardless of what else is done.

Simultaneous Dislocation of Both Shoulder Joints.—A. P. Heineck (*Annals of Surgery,* May, 1924) makes a study of fifty-eight cases, reaching the following conclusions: The prognosis in bilateral shoulder dislocations is influenced by many factors, chief among which should be mentioned the age of the patient and of the dislocation, the patient's occupation, the associated injuries and the treatment instituted. As a rule, the older the patient the longer the period required for recovery. As to the age of the luxation, it is agreed that dislocations call for immediate reduction. Sequelæ are thereby forestalled; nothing is gained by delay. Convalescence is slower in handworkers than in intellectuals; delicate hand movements are late in returning. Associated injuries require appropriate treatment. In some cases full function is not restored before the detached muscles or tuberosities are permanently fixed in their normal place. Bloodless manipulative methods, supplemented by electrotherapy, mechanotherapy and hydrotherapy give the best results. The two dislocations, right and left, are reduced

separately, usually by the same method and at the same sitting. The duration of immobilization varies in different cases: twelve days, five weeks, etc. The author is of the opinion that most clinicians err in prolonging complete immobilization beyond two weeks. About the tenth day gentle passive motion and massage and electrical treatment should be instituted. After an arthrotomy and division of extensive adhesions, even though the bone is replaced to its normal position, some joint stiffness is to be expected. This is generally compensated for by a movable scapula. The restoration of the rotundity of the shoulder and the absolute relief of pain give much satisfaction to the patient. After reduction of the dislocations both shoulders are immobilized during the period of repair, the arms fixed in front of the chest by adhesive plaster, bandages, etc., for from two to three weeks. The patient is practically helpless, he cannot feed himself, he cannot dress himself, he cannot attend to many of his other needs; he must be provided with an attendant.

Healing of Fractures.—A. Kolodny (*Journal of Bone and Joint Surgery, October,* 1923) reports on an experimental study of the periosteal blood supply as follows: 1. An adequate blood supply of the periosteum is essential for normal union of fractures. 2. The periosteal callus plays a far greater rôle in the union of fractures than the endosteal callus.

Recurrent Dislocation of the Shoulder.—W. R. McAusland (*Surgery, Gynecology and Obstetrics,* June, 1924) offers the following conclusions: From a study of the literature of this subject, it appears that the treatment of recurrent dislocation of the shoulder has been one of varying technic. No consistent method, adaptable to a large number of cases, has been reported. On the contrary, each treatment differs according to the importance attributed by the surgeon to the pathological condition of the bone, capsule, and muscle. The majority of cases have been treated by some form of capsulorrhaphy, and in most of them satisfactory results have been obtained.

THE ANEMIAS

Sickle Cell Anemia.—John G. Huck (*Bulletin of the Johns Hopkins Hospital,* October, 1923) discusses the etiology, pathology, blood findings, symptomatology, diagnosis, prognosis, and treatment of sickle cell anemia. To the four cases already on record, he adds fourteen from the Johns Hopkins Clinic, two of which are reported in detail. From experimental studies Huck concludes that the sickling of the cells is an inherent property of the red blood cells, and that the patients' sera are without effect on normal erythrocytes. Attempts to transmit the disease to animals were unsuccessful. Sickle cell anemia is a specific disease entity, thus far described only in the negro race. It is transmitted according to the Mendelian law.

Anemia in Nephritis with Nitrogen Retention.—C. Aubertin and J. Yacoel (*Bulletins et mémoirs de la Société médicale des hôpitaux de Paris,* June 19, 1924) report cases showing that in many instances of nephritis of the azotemic type the accompanying anemia, though clinically manifested only in a distinct pallor of the patient, is nevertheless sufficiently pronounced to lower the erythrocyte count to about two milions. These cases constitute a transition stage between the mild anemia of Bright's disease and the pernicious anemia of cases with severe nitrogen retention. In general, the anemia and azotemia show simultaneous progression. On the other hand, in chronic nephritis without nitrogen retention, anemia is generally absent.

Pernicious Anemia.—An analysis of the clinical histories of patients with pernicious anemia in the Johns Hopkins Hospital, from 1918 to 1922 inclusive, by Charles R. Willson and Frank A. Evans (*Bulletin of the Johns Hopkins Hospital,* February, 1924) is based on the histories of one hundred and eleven patients with pernicious anemia, eighty-two men and twenty-nine women, of whom eight were negroes. Seventy-one per cent. of the cases occurred between thirty and sixty years of age. There were only five patients who had had other members of their families die from anemia. The analysis of the clinical and laboratory findings is too detailed to abstract, but the authors have summarized a few of the points demonstrated by the study as follows: The anemia once established practically never completely regenerates. Anisocytosis and poikilocytosis are constant findings; basophilia is rather uncommon; a leucopenia is a characteristic finding. An eosinophilia as high as seventeen per cent. may be found, but an actual increase in eosinophile cells is rare. This also applies to the large monouclear and transition cells. Myelocytes, as high as ten per cent., are occasionaly found. Free hydrochloric acid in the gastric contents of these patients is so rare that, when present, it should put the diagnosis under suspicion. The spleen is palpable in only about twenty per cent. of these patients, and the liver in about thirty-three per cent. All patients, whatever other discomforts they may suffer, have one or more of the following symptoms: weakness, disturbances in digestion, and nervous disorders of the extremities.

Pernicious Anemia.—Charles F. Martin (*Medical Clinics of North America,* May, 1924) summarizes his findings as follows: The blood picture of pernicious anemia is not pathognomonic *per se* and where no etiological factor is found and the course of the disease is characteristic, and where in addition, the type of anemia is "hemolytic" the diagnosis of idiopathic or pernicious anemia may be made.

In the treatment, the various forms of arsenic have given some degree of success. Hydrochloric acid in sufficiently large doses is of great value in counteracting the effects of the achylia. The results of transfusion are: 1, Improvement in the symptoms—noises in the ears, vertigo, the nervous symptoms, and the general condition; 2, a gradual rise in the blood count, and 3, longer remissions, often lasting for several years. The immediate results of splenectomy are: 1, Improvement in the symptoms and general condition; 2, improvement in the red cell count; 3, diminished urobilin in the duodenal content, in the feces, and in the urine; 4, increase in the number of nucleated red cells in the peripheral blood. Complete cures are apparently rare, but life is often prolonged.

Splenectomy should be attempted under the following conditions: 1, Only after focal infections have been removed; 2, when transfusions have already been tried and found beneficial; 3, preferably during a remission and when the blood is in relatively good condition; 4, probably the earlier the splenectomy, the better. Splenectomy should not be attempted under the following conditions: 1, In the aplastic type of anemia; 2, where the spinal cord changes are marked; 3, where transfusions have failed to give benefit.

Sprue and Pernicious Anemia.—Byrom Bramwell (*British Medical Journal,* March 1, 1924) believes that there is a close relationship between sprue and pernicious anemia. The profound anemia in both conditions appears to be due to the absorption of some blood destroying toxin. In both diseases the blood destruction seems to take place chiefly in the portal circulation, with resulting deposits of pigment in the liver. In pernicious anemia, as in sprue, the author believes that the mouth and tongue lesions are probably part and parcel of the lesions in the gastrointestinal tract. In both conditions, the etiologic factor seems to be a blood destroying toxin which is derived from the gastrointestinal tract and the clinical history of both have many points in common. It is suggested that in cases of Addison's (pernicious) anemia parathyroid extract should be tried as the author had some very favorable results with it.

Relationship of Some Hemolytic Disorders to Pernicious Anemia.—P. N. Panton, A. G. Maitland-Jones and George Riddoch (*Lancet,* March 15, 1924) review five groups of cases as examples of obscure hemolytic disorders related to pernicious anemia. The generally accepted evidence for this view is the serious diminution of erythrocytes, in the absence of external blood loss, associated with signs of greatly increased red cell formation as shown by hyperplasia of the red marrow and the presence of abnormal and immature red cells in the peripheral circulation; also by increased pigment excretion in the urine, coloration of the blood serum, the deposition of free iron in the viscera, splenic enlargement, and red cell phagocytosis. In the first group there are the blood changes of pernicious anemia, jaundice and hemoglobinuria. The second group were cases of arseniuretted hydrogen gas poisoning. The third group showed severe internal hemolysis of years' duration with partial storing of the broken down blood pigment in the skin instead of in the viscera. The fourth group were cases of socalled paroxysmal hemoglobinuria. One case

of the fifth group the diagnosis lay between pernicious anemia and acholuric jaundice. The fact that this was of the familial type suggests a different etiological factor. The important factors in the determination of the clinical picture are the main incidence of the lesion and the rapidity of the pathological process.

The Platelet Count in Cases of Pernicious Anemia, Using Thomsen's Method of Counting.—Hobart A. Reimann (*Buffalo General Hospital Bulletin,* January, 1924) found that the platelet count varies widely in pernicious anemia, the lowest count being 800 and the highest 333,000 to the cubic millimetre in different cases, and that it may vary between 80,000 and 250,000 in the same case at different times. He also showed that the number of platelets usually increases in proportion to the number of erythrocytes and in inverse proportion to the excretion of urobilin. The relationship of platelets and erythrocytes has been frequently observed by others and is interpreted as an indication of the activity of the hematopoietic system.

The Value of Germanium Dioxide as a Therapeutic Agent in the Anemias of Childhood.—Herbert W. Schmitz (*The Journal of Laboratory and Clinical Medicine,* March, 1924) presents the results obtained by the use of germanium dioxide in thirteen selected cases of anemia in childhood, given by mouth in 0.2 per cent. water solution. The dose ranged from thirty to sixty mg. daily, or every other day, until about three hundred to one thousand mg. had been administered, based on one hundred to one hundred and fifty mg. to the kilo of body weight. All the cases studied, except one of von Jaksch's anemia, showed a definite response by marked and sustained increases in the number of red blood cells and in the hemoglobin content. The most notable results were obtained in the cases of anemia following malnutrition and acute infections. Some clinical improvement was noted in a number of cases.

Addison's (Pernicious) Anemia and Subacute Combined Degeneration of the Spinal Cord.—Arthur F. Hurst (*British Medical Journal,* January 19, 1924), states that symptoms referable to the spinal cord are frequently found if carefully looked for and that anemia is also frequently found in degeneration of the spinal cord. Subacute degeneration is often associated with a family history of Addison's anemia. The author does not believe that oral sepsis and glossitis are specific symptoms in Addison's anemia, but he believes that achlorhydria is an essential predisposing cause of Addison's anemia and subacute combined degeneration of the spinal cord and is due to the loss of the antiseptic action of the gastric juice, which enables the bacteria to reach the stomach from the mouth in the presence of oral sepsis and thus to infect the intestine. The combination of achlorhydria and oral sepsis favors the development of Addison's anemia in the presence of a special streptococcus, which produces hemolytic and neurotoxic poisons when it reaches the intestine. When the production of the toxins is arrested, the blood shows spontaneous improvement. Symptomatic treatment accelerates the improvement.

NEUROLOGY

Transient Postpartum Paralysis of the Recurrent Laryngeal Nerve.—Karl Herold (*Zentralblatt für Gynäkologie,* March 15, 1924) reports a case showing an afebrile paralysis of the right vocal cord. It was presumably due to the strain of labor even though the labor was not very difficult. The hoarseness disappeared spontaneously in about two weeks and therefore it could not be definitely decided whether it was due to a circumscribed cerebral edema, a slight paralysis, or a peripheral toxic effect. The laryngological and neurological examinations were negative.

Recklinghausen's Neurofibromatosis.—B. Brooks and E. P. Lehman (*Surgery, Gynecology and Obstetrics,* May, 1924) give several illustrated histories and discuss them from the point of view of bone involvement. They conclude that these observations emphasize the fact pointed out by Gould that Recklinghausen's neurofibromatosis is a condition affecting bone as well as skin and nerve. The fundamental process in the disease is one of tumor growth. It has long been known that the result of this tumor growth is to produce characteristic clinical manifestations in the skin and nerves. These observations indicate that equally characteristic clinical manifestations develop in the bones. The recognition of these changes in the bones is of diagnostic importance, particularly in those instances in which the complete clinical picture, heretofore considered classical, is not developed.

Intractable Pain Relative to Rhizotomy and Spinal Section.—R. C. Shaw (*British Journal of Surgery,* April, 1924) shows that the posterior roots are actively concerned in the conduction of stimuli in most cases. Early or late recurrent pain, of ten without psychical disturbances, indicates the presence of some other conducting channel. In concluding the case for rhizotomy the following facts must be weighed: 1. In cases of stump neuralgia of the upper or lower limbs all ventral and dorsal roots should be severed, if the prognosis is at all favorable, in every case. This procedure will abolish intractable stump neuralgia of a thermalgic type; but there may be a residual pain due to sympathetic mediation, in which case, if the opportunity presents, where there has been a double cervicodorsal rhizotomy, the extirpation of the last cervical and the first dorsal sympathetic ganglia should be considered. 2. Posterior rhizotomy is occasionally successful for limb neuralgias, but the prognosis is completely uncertain. 3. In only rare cases is a localized rhizotomy for localized pain successful. 4. In tabes cases the considerable proportion of successes after posterior root section justify the operation in localized unilateral cases. 5. This should be accompanied by anterior rhizotomy. 6. The great disadvantage is considerable exposure of the cord necessary for extensive root section, with consequent shock. If the pain stimuli are intercepted, the anterolateral column of the spinal cord muust be considered.

Epidemic Encephalitis with Painful Abdominal Spasm.—Arthur J. Hall (*Lancet,* March 29, 1924) observed an epidemic of encephalitis in which abdominal myoclonus was a very prominent symptom. The muscles affected were either the upper part of the rectus abdominis, unilaterally or bilaterally, or the left external oblique. The spasms recurred at frequent intervals and varied in depth and in regularity. With bilateral involvement of the upper recti muscles the spasms were often synchronous but they may alternate from one side to the other. The cases that showed nothing else than the painful abdominal myoclonus (of Cruchet) were identical with other forms of the disease. The stigmata of the disease were quite plainly evident.

Histological Study of the Central Nervous System in Experimental Botulinus Poisoning.—E. V. Cowdry and F. M. Nicholson (*Journal of Experimental Medicine,* June, 1924) state that except for a slight degree of vascular engorgement all the lesions noted in the brains of mice, guineapigs and rabbits suffering from botulinus poisoning are readily susceptible of some explanation other than that they are produced by the direct action of the toxin upon the central nervous system. This absence of microscopical evidence of a central action of the toxin is not, of course, conclusive proof that the cells in the brain are not primarily involved, as it is conceivable that, owing to the delicacy of the nervous mechanism, the toxin might well act centrally without leaving any traces microscopically visible. The observations tend to show that there is no histological evidence inconsistent with the results of physiological experiments indicating that the site of action of the toxin is upon peripheral nerve terminals.

Management of Injuries to Cranium.—J. O. Bower (*Annals of Surgery,* October, 1923) presents ten cases with the following summary:

1. In injuries to the cranium or its contents, lumbar puncture with spinal fluid pressure observations is essential to proper management.

2. In certain cases, withdrawal of fluid may so reduce intracranial pressure as to render operation unnecessary; in borderline cases it is a means of determining early the least degree of intracranial tension; blood pressure readings at definite intervals may accomplish this in part, but one may have an increase in intracranial pressure and no corresponding increase in blood pressure.

3. Cerebrospinal pressure observations are important before and after plastic operations on the skull.

4. Finally, repeated examinations of the spinal fluid for microscopic blood are of importance in differentiating the less severe types of cerebral trauma.

Communication Between the Vagus and the Cervical Sympathetic.—R. C. Shawe (*Lancet,* March 29, 1924), asserts that the importance of the vagosympathetic fibres depends upon their two main spheres of distribution: first, to the cardioaortic region, and second, to the thyroid gland. In the former association they mediate, at least in some cases, as shown by the success of Jonnesco's operation, the critical nervous impulses of angina pectoris, transmitting the afferent stimuli from the heart and aorta, and probably transmitting efferent stimuli to that region. These nerves form a concentration point for the sympathetic cardiac fibres from the upper dorsal segments, and as such present a readily accessible isthmus at which to attack the vicious cycle of irritation by surgical methods. In the latter association these same communicating nerves probably mediate secreting fibres to the thyroid, and it is the pathological hyperexcitability of such fibres which may form a most important etiological factor in the production of exophthalmic goitre; consequently, in suitable cases, in association with the other sympathetic ganglia, their extirpation would appear to be justified in this disease, as judged by the results of Jonnesco's work.

Pain in Upper Abdomen and Chest.—C. H. Peck (*Surgery, Gynecology, and Obstetrics,* February, 1924) points out that the pain in the upper abdomen or chest is an outstanding symptom common to many pathological conditions not always easy to differentiate, that a number of nonsurgical conditions may cause upper abdominal pain, gives a comprehensive survey of the pains of abdominal diseases, and concludes: Upper abdominal pain must never be taken lightly or casually. Many cases are due to lesions which call for prompt surgical intervention. Many, when first seen by the surgeon, are masked by the previous administration of narcotics. On the other hand, surgical intervention without proper preoperative study and diagnosis on the plea of exploration, may mean unnecessary operation for some trifling nonsurgical condition and should not be tolerated.

Etiology of Stammering.—M. Sachs (*Wiener klinische Wochenschrift,* January 31, 1924) points out that, although the speech centre is localized unilaterally in the brain, the act of speaking is the result of a pronounced bilateral innervation and muscular activity. As a result of this arrangement there may be incongruities in the formation of sound, which might explain some of the disturbances involved in stammering, just as in certain forms of squint of the eye. It is a noteworthy fact that a number of stammerers are lefthanded and also that many individuals who have lost the use of their right arm become stammerers.

Passage of Iodides Into the Cerebrospinal Fluid.—Henry Cohen (*Lancet,* January 19, 1924) injected fifty c.c. of a 10 per cent. potassium iodide solution intravenously and he withdrew the cerebrospinal fluid at intervals of twelve to sixty minutes and tested it with starch. The meningitides gave positive results; other diseases, such as tabes, disseminated sclerosis, meningismus and normal cases gave negative results. If the passage of the iodide occurred it was found to be less than 0.5 mg. to the 100 c.c. of cerebrospinal fluid. The concentration of iodides is many hundred times greater in the blood than in the cerebrospinal fluid. In view of the great diffusibility of iodide through tissue cells—witness their rapid excretion by the kidney—no physicochemical theory of the formation of cerebrospinal fluid will be satisfactory until it explains the phenomenon of the resistance of the cells of the choroid plexus to this salt.

Diagnostic Value of Sugar Concentration in Spinal Fluid.—Herbert B. Wilcox and John D. Lyttle (*Archives of Pediatrics,* April, 1923) show that normally the spinal fluid sugar concentration is about one half that of the blood and that its range of variation corresponds to that of the blood. In disease of the central nervous system there is no constant definite relationship between blood and spinal fluid sugar concentration, but there is an inconstant disturbance of the usual relation found in the majority of normals. In tuberculous meningitis there is a wide divergence, produced by the low spinal fluid content and the, at times, high blood content. In epidemic encephalitis there is an approximation, produced by the high sugar content of the spinal fluid—the direct opposite to the relationship seen in tuberculous meningitis. The relation between the sugar concentration in blood and spinal fluid in anterior poliomyelitis shows no consistent deviation from the normal.

The Kottman Reaction in the Insane.—A. M. Saunders (*Journal of Laboratory and Clinical Medicine,* March, 1924) recommends the employment of the Kottman test, which is used to determine the amount of thyroid secretion by physicochemical means. The technic is given, and is said to be simply and rapidly carried out. The test is of especial value in the insane and neurasthenic patients, and provides a method to estimate the frequency and extent of impaired function of the thyroid. Saunders has used it in four hundred cases on the blood serum, and in fifty cases on blood sera and spinal fluids from the same patients. Of the one hundred and five case giving a retardation, a little less than half were frankly hyperthyroid, with rapid pulse, excitability, and goitre. In most of the others there were very indefinite symptoms.

MALIGNANT GROWTHS

Giant Cell Tumor of Bone.—J. C. Bloodgood (*Surgery, Gynecology, and Obstetrics,* June, 1924), says that on careful reinvestigation of all his material he is unable to find a central lesion with an intact bone shell which resembles the giant cell tumor in the gross and more or less microscopically, that has not remained free from metastasis. Many of them are free of recurrence after curetting. Therefore, at the present time, if a surgeon explores a central bone tumor in which the x ray, palpation, and exploration exclude tumor tissue outside the bone shell, or the capsule about the bone shell is destroyed, he can be certain that the only possible sarcoma is one resembling in the gross and in the section the osteogenic sarcoma of the chondromyxoma type—a tumor easily to be distinguished from the giant cell tumor or ostitis fibrocystica. If this statement is true, it simplifies the diagnosis, because the cellular pathology of the giant cell tumor in a certain percentage of cases, especially under the high power, has been confusing to experienced pathologists, and even today is incorrectly diagnosed sarcoma leading to unnecessary amputation or mutilating resections. The mutilation is especially great when the resection is done in the jaw.

Hyperplasia of Breast Tissues (Mazoplasia—Chronic Mastitis).—G. Lenthal Cheatle (*British Medical Journal,* April 12, 1924) prefers the term mazoplasia to that of hyperplasia of breast tissues. There are three forms: 1, desquamative hyperplasia of the epithelium lining the ducts and acini; 2, permanent cysts of the duct and acinus; 3, those with the character of papillomata, and 4, nondesquamating epithelial hyperplasia. The author believes the latter to be a cystic condition and that a breast containing them should be removed because of the inherent danger. They usually show infiltration of the surrounding tissues and should therefore be regarded as part of a carcinamatous process. Both the duct and acinus are affected. The duct epithelium also becomes markedly papillomatous as well as lactiform. The term chronic mastitis, as usually understood, includes several totally different pathological changes. Generally, these breasts contain small cysts with an active epithelium. Even breasts containing big cysts ought to be amputated because unsuspected carcinoma and papillomata may be found in them. The presence of papillomata may be diagnosed by a careful examination of the ampulla and ducts of the breast. Frequently one ampulla can be felt enlarged and painful, manipulation of which gives rise to a bloody discharge from the nipple. The duct leading from the tumor containing ampulla is regularly enlarged and convoluted. The existence of one multiradicular papilloma of the breast is very rare and the presence of these signs are an indication for the removal of the whole breast and the axillary glands.

Fibroadenoma of the Stomach.—R. Matas (*Surgery, Gynecology and Obstetrics,* December, 1923) reports an unusual case of a pediculated polypoid fibroadenoma of the stomach of the ball valve type, causing an unusual and complex syndrome. He emphasized the following points.

It is the failure to realize that a benign and especially a pediculated tumor in the stomach may assume a very malignant aspect ending in death—that is largely responsible for the little attention that is given to these tumors in scanning the differential diagnosis.

The one salient fact that comes out of this discussion and that is to be retained by the surgeon in approaching a surgical gastropathy is that the most perfect clinical picture of cancer of the stomach may be imitated even to a fatal issue by a perfectly operable benign growth.

Strain and Family Differences in Susceptibility to Cysticercus Sarcoma.—M. R. Curtis and F. D. Bullock (*Journal of Cancer Research,* April, 1924). More than ten years ago Murray pointed out that by breeding together mice with cancerous ancestry an increase in the frequency of spontaneous cancer was observable in the descendants. Bullock and Curtis have approached the problem from another angle. They have taken a species of animals in which a sarcoma never occurs in the liver, except after prolonged irritation by the cysticercous form of Tænia crassicola. The average rat is not very susceptible to this irritation, rarely more than one per cent. reacting by the production of a sarcoma of the liver, but the writers, by the means of selecting those animals in which sarcoma did develop, and breeding together the descendants of such animals, infesting these descendants, and eliminating the ones which did not develop sarcoma, and breeding those which did, have obtained a strain of an astonishing susceptibility to this particular type of irritation. In one litter of this strain, out of nine animals, eight tumors were obtained. The paper is a model of scientific accuracy. All of the facts reported have been subjected to statistical analysis to show that the statements made are justified. The great interest of their discovery lies not so much in its application to heredity in cancer in human beings as in the fact that there has been discovered in one strain of animals a new biological reagent for inheritable tissue alterations, this reagent being the production of sarcoma following the irritation of the cysticercus of Tænia crassicola.

Endothermy in Neoplastic Diseases.—George W. Wyeth (*Annals of Surgery,* January, 1924), says that when we come to summarize the advantages of endothermy we find that by its quickness and cleanness of application, its accuracy of dosage, its reduction of the dangers of metastasis and the likelihood of recurrence, the rapidity of convalescence and the good cosmetic results, it has made for itself in the treatment of accessible neoplastic diseases a place which no other agency can fill.

Excretion of Lactic Acid in Carcinosis.—K. Glaessner (*Wiener klinische Wochenschrift,* April 10, 1924) reports the excretion of lactic acid in the urine in patients afflicted with carcinoma and in concerous mice following the intravenous injection of glucose solution. This is not to be found in persons not afflicted with carcinoma nor in healthy mice.

Malignant Disease of the Testis.—W. B. Coley (*Annals of Surgery,* September, 1923), says that the number of permanent cures following surgical removal of the testicle for malignant disease is comparatively small, the proportion being not over five to ten per cent. The author believes that this number of cures is not sufficiently increased by the radical operation of removal of the retroperitoneal glands by the abdominal route, to warrant the very considerable risk of such an operation. Long continued systemic treatment with the mixed toxins of erysipelas and bacillus prodigiosus, combined with thorough radiation of the abdomen and supraclavicular glands by radium or x rays, in his opinion offers a far better hope of permanent cure than any form of operative treatment alone. If one waits after operation until a recurrence has taken place, marked regression of these recurrent tumors, and in some cases complete disappearance, may be expected from radium treatment; but in the great majority of these cases, the regression or disappearance will prove only temporary and death from extension of the disease will occur.

Primary Sarcomatosis of the Leptomeninges.—Frank R. Ford and Warfield M. Firor (*Bulletin of the Johns Hopkins Hospital,* March, 1924), give the histories of four cases of this condition, and have collected from the literature and abstracted the histories of twenty-eight others. They state that the clinical picture is composed in varying proportions of signs of increased intracranial pressure, cranial nerve palsies, signs of meningeal irritation and of involvement of the cord and posterior spinal nerve roots. The pathological basis is a diffuse invasion of the cerebral and spinal leptomeninges and the subarachnoid spaces by malignant neoplasms resembling sarcomas, which metastasize by way of the cerebrospinal fluid. These growths are of doubtful origin, but many are probably gliomas. The diagnosis depends on the demonstration of "tumor" cells in the spinal fluid and the recognition of the clinical picture, which is variable but usually characteristic.

DIABETES

Blood Sugar and Diabetes.—J. Pal (*Wiener klinische Wochenschrift,* April 10, 1924) maintains that hyperglycemia, which is due to bound sugar (glycemia) is not the cause of the diabetic glycosuria. The cause should rather be sought in the presence of free sugar in the blood, which may be the result of either a splitting off of sugar from the glycemia or of an advance beyond the assimilating power. The diabetes of pregnancy is a condition analogous to the involvement of the island of Langerhans mechanism similar to that of the kidney in pregnancy.

Diabetes and Infantilism Treated with Insulin.—E. Apert (*Bulletins et mémoirs de la Société médicale des Hopitaux de Paris,* June 26, 1924) reports the case of a boy of seventeen years passing two hundred grams of sugar a day and weighing but twenty-nine kilograms. After one year of insulin treatment his condition was completely transformed. His skin previously so shrunken as to suggest gerodermia, became clear and rosy, and he gained eleven kilograms in weight, though only three centimetres in height. The infantile genitals showed beginning development. The glycosuria ranged from nil to twenty or thirty grams and the acetonuria disappeared. An operation under ether for undescended testicle was well borne. No remedy other than insulin had been administered.

Neurological Observations on the Pathogenesis of Diabetes Mellitus.—Otto Binswanger (*Schweizerische medizinische Wochenschrift,* March 27, 1924) asserts that glycemia is fairly independent of the rate of sugar production and disintegration. He ascribes to the nervous regulation of the blood sugar and the disturbances of this regulation which lead to diabetes the same rôle as to the hormones which act as activators to the central nervous system. He shows how constitutional inferiority may also involve all the organs that are concerned in the regulation of sugar, so that diabetes suddenly develops, how psychoneuropathy and glycosuria may be closely associated, and how "involutional diabetes" occurring beyond the fourth decade may be associated with a hereditary organic weakness of the endocrine system, frequently combined with psychicnervous elements (for example, climacteric melancholia with diabetes). Insulin acts as a stimulant to the parasympathetic system. A deficiency of insulin affects the metabolism of the liver and the parasympathetic centres at the base of the brain.

The Pancreas and Diabetic Metabolism.—Horst Oertel (*Lancet,* April 5, 1924) does not believe that insulin is a secretion of the islands of Langerhans and that it furnishes a product which "aids in the burning of blood sugar" and that the islands are not wholly independent structures, embedded in the pancreas. The islands are a phase in the constant morphological fluidity of the pancreas. Pathological evidence of island changes in diabetes as evidence of independent function is now discredited, as hyaline changes, very similar to those occurring in diabetes, are also observed in nondiabetics, especially in older persons or cachectics. However, the independent anatomical and functional position of the islands rests on an uncertain basis. The whole pancreas is in constant regression and progression, just like other endocrine organs. While normally these two processes proceed side by side in orderly physiological balance, they may become upset and, by exaggeration or inhibition of one or the other, lead to pathological states. The author believes that in this manner the essential atrophy of the pancreas develops which is more commonly found in severe diabetes of the young than the cirrhotic (inflammatory) atrophy. There is still a reasonable uncertainty in the exact mechanism of the relationship of the pancreas to sugar metabolism. There is enough morphological and experimental evidence to question the independence of the islands and the conception of them as organs of internal secretion which are essential for the combustion of sugar.

Arteriosclerosis and Diabetes.—Byron D. Bowen, Edward C. Koenig and Anne Viele (*Buffalo General Hospital Bulletin,* April, 1924), in a study of the lower extremities in diabetes as compared with nondiabetic states, from the viewpoint of x ray findings, with particular reference to the relationship of arteriosclerosis to diabetes, remark that their study appears to justify the clinical impression that diabetes, especially when uncontrolled, is a contributing

factor in the production of arteriosclerosis which is usually of the senile type. The relationship between diabetes, arteriosclerosis, and gangrene seems to be very close and suggests the following sequence: first, the diabetes contributing to the arteriosclerosis, and secondly, the combinations of the two diseases favoring gangrene. The data on the cases of arterial hypertension, when compared with the data on the nonhypertensive group, strongly suggest that diabetes, when associated with arterial hypertension, as it frequently is, pursues a definitely progressive course, and that the combination tends to the production of arterio-arteriosclerosis and eventually perhaps gangrene. The x ray has proved to be a very satisfactory method of diagnosing arteriosclerosis of the lower extremities and has yielded information of some value. Furthermore, the authors believe that the diagnosis of early arteriosclerosis of the lower extremities, which is difficult to make in any way but by x ray, is of considerable importance in the prognosis and management of vascular conditions, especially when combined with diabetes.

New Method of Treating Glycosuria.—Gustav Singer (*Wiener klinische Wochenschrift,* February 14, 1924), reports several cases of diabetes that were favorably influenced by parenteral injections of protein. Among these was one of an elderly woman, to whom an injection of milk was given for a serious complication of the eyes. The reduction of the excretion of sugar and the striking reduction in the blood sugar gave additional support to the author in his belief that the parenteral injection of proteins affects the metabolism of diabetics in a favorable manner. Among ten diabetic patients, five showed improvement after the parenteral injection of proteins.

Sixty-four Cases of Diabetis Mellitus Treated with Insulin.—Leon Jonas (*American Journal of the Medical Sciences,* November, 1923) says that thirty-four of the sixty-four patients did not gain weight; twenty-seven were two or more pounds heavier at discharge than their lowest weight in the hospital; two gained twenty pounds; four gained between ten and fifteen pounds; nine gained between five and ten pounds, and twelve gained between two and five pounds. His conclusion is that gain of weight is not immediate even on very liberal diets. Apparently an adjustment must take place before a gain in weight begins.

ENDOCRINOLOGY

Lugol's Solution in Exophthalmic Goitre.—A. S. Jackson (*International Journal of Medicine and Surgery,* April, 1924) presents a tabulated report on a series of twenty cases, and says:

In this series are reported twenty patients with a severe or moderately severe exophthalmic goitre; all received Lugol's solution and in all there was a remarkable clinical improvement. The administration of the solution was carefully gauged by a study of the basal metabolic rate by the Tissot gasometer method. As shown by the table, there has been an average reduction in the basal metabolic rate of eighteen per cent. The clinical improvement has been proportional. The patients no longer thrash about in bed and chafe their extremities; the staring expression so characteristic of their disease disappears, although exophthalmos persists until after thyroidectomy. The extreme nervousness accompanied by insomnia is abated, the patients are more quiet, and their demeanor is more composed. Apparently the greater the toxicity, the greater the degree of clinical improvement. Results in the treatment of toxic adenoma with Lugol's solution have not been satisfactory and its administration to these patients is not advised.

Simplified Treatment of the Goitre Question.—T. L. Deaver (*International Journal of Medicine and Surgery,* April, 1924) discusses the origin and distribution of goitres, the forms of enlarged thyroid, peculiarities of the thyroid, diagnosis, and treatment, in the light of his twelve years' experience. Among the most interesting of his observations are the following:

The thyroid gland is a necessary element in the work of internal secretion, and is closely related to the reproductive organs. Our records show a number of cases in which a large colloid goitre completely disappeared after hysterectomy for fibroids. Some ovarian tissue was left in each instance. Our custom now is never to remove a simple goitre when doing a hysterectomy. We have never yet encountered the combination of goitre and infantile uterus in the same patient. Because of its equalizing influence upon the other glands of internal secretion, the thyroid should never be removed during adolescence, except for unavoidable reasons.

The important features in the matter of diagnosis, we believe, are to determine whether a patient has a goitre or not; whether it is simple or toxic; and whether it is medical or surgical or both. The finer delineations between the toxic and nontoxic adenoma, and the toxic and exophthalmic goitre are scientific as well as therapeutic, but belong largely to the realm of treatment.

Concerning treatment the author says:

Electricity, violet ray and all forms of massage are of questionable utility. They may even do harm. X ray exposure in toxic and exophthalmic cases, before thyroidectomy, has many advocates. It appears to raise the patient's resistance to postoperative toxemia. Very little benefit is to be derived from such treatment in simple goitre.

To know when to operate and how to control hemorrhage are two great essentials in goitre surgery. And further, we need only say that, up to the present moment, no method or appliance has been devised by which the cardiac reserve can be absolutely determined. Sudden calamities in unsuspected instances, even when the metabolic rate and other findings were favorable, lend weight to this statement.

We should cease talking about bloodless tonsillectomy and work toward bloodless thyroidectomy. Control of hemorrhage is a life saving element in thyroid surgery. A quick operation, attended by excessive loss of blood, is much more shock to the patient than a bloodless procedure covering twice as much time. That the thyroid is closely connected with the sympathetic nervous system, is shown by intermittent dilatation of the pupil from traction on the gland. A very slow pulse during operation—sixty or below—is a danger signal, and indicates a weak myocardium. One should also take warning from a rapidly rising pulse rate, with a noticeable decrease in volume. A fall in blood pressure precedes this condition.

The preparation of the patient is of the utmost importance, and in exophthalmic cases may take weeks or months of time. It includes rest of body and mind, proper medicines, a selected diet, refreshing sleep and the free ingestion of water, especially during the last few days preceding the operation. Relatives and solicitous friends should be held in abeyance. While there is marked cerebral excitability with tachycardia, the room should be kept dark, sedatives given and ice applied to the precordium, the forehead and back of the neck. These patients cannot stand heat, and the mortality, operative and nonoperative, is apt to be higher during July and August.

Anent operative treatment Dr. Deaver says:

If it is possible to do a primary ligation of the polar vessels before removing the mass, much time and anxiety may be saved.

Traction on the windpipe and the pneumogastric, particularly in elderly people, should be strenuously avoided.

The recurrent laryngeal nerve and the parathyroids are protected in three ways: By avoidance of undue traction and rough handling of tissue; careful use of clamp and ligature deeply and about the inferior thyroid vessels, more especially the left; and by leaving the posterior aspect of each lateral lobe.

Of great importance is the fact that, after partial thyroidectomy for any form of goitre, stress being laid upon the toxic variety, the patient shows less resistance to intercurrent disease, rheumatism, pneumonia, acute endocarditis, tuberculosis, and so on. This apparent reduction of immunity may cover a considerable length of time. In our followup review of several hundred cases, operated on from two to twelve years, a study of the fatalities and their cause would seem to show that the thyroid gland may be a vital part in the chain of defense against disease.

X Ray Therapy in Exophthalmic Goitre.—Jose Gutierrez (*La Semana Medica,* April 3, 1924), writes that radiotherapy (not ultrapenetrating), cures hyperthyroidism whether pure or associated (Basedow's disease or cystic goitre). It alleviates both the goitre and the exophthalmos but does not cure them. It is a painless treatment and convenient as it necessitates merely a monthly session of short duration. It in no way contraindicates other treatments and the number of applications required is between ten and fifteen.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to

A. R. ELLIOTT PUBLISHING COMPANY.

Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, NOVEMBER 5, 1924

Medicolegal Notes.

NEGLIGENCE IN TREATMENT OF SPIRAL FRACTURE OF TIBIA NOT SHOWN.

In an action for malpractice in the treatment of a spiral fracture of the tibia, the testimony showed that the leg as set had good alignment, though the ends of the bone were not in full apposition. The Washington Supreme Court holds, Kemp v. McGillivray, 225 Pac. 631, that the defendant could not be successfully charged with malpractice, under the rule that a surgeon is not guilty of malpractice if the treatment he employs is that which is recognized and approved by those reasonably skilled in his profession, practising in the same neighborhood and in the same line of practice, and if he administers that treatment with such a degree of skill and diligence as such practitioners ordinarily exercise in like cases.

Medical witnesses all testified that the method of treatment used by the defendant—traction weights and pulleys—is recognized and approved by those skilled in the profession practising in that community and generally, and the most if not all of them testified that was practically the only method, and that, while the plaintiff was under the defendant's care, he was given that treatment with skill and diligence.

It was held not obligatory on the defendant to say anything to the patient early in the course of treatment about a probable shortening of the leg where he was not asked about it and he knew he was getting a good result, and this was not a willful concealment of negligence and lack of skill.

INSUFFICIENT EVIDENCE OF SURGEON'S NEGLIGENCE IN LEAVING GAUZE IN WOUND.

In an action for malpractice against the plaintiff's family physician and an operating surgeon, where it was claimed that defendants had negligently left a roll of gauze packing in the patient's body after an appendical operation, resulting in death, there was no claim of improper diagnosis by the family physician or negligence in procuring or recommending the services of the surgeon or want of care while present in the operating room. There was evidence that both hospital staff and surgeons exercised the highest possible degree of care at the time of the operation. It was held that the physician could not be held liable. "Standards of duty for a family physician attending an operation under circumstances appearing in this case cannot be established by argument or assertion. What constitutes ordinary care in a case such as this is to be determined by the testimony of those who know what it is, not as a matter of common knowledge."

The burden was held to be upon the plaintiff to satisfy the jury to a reasonable certainty that the pack was left in the body of the deceased by the surgeon. It is not sufficient for the evidence to raise a suspicion or to indicate a possibility. It must be sufficient to remove the controverted question from the field of doubt and speculation into that of reasonable certainty. Three years before the first of the two operations by the defendant in 1920 the patient had been operated upon for appendicitis and the evidence showed that such packs are ordinarily used in appendical operations or were at the time of the first operation, in 1917, in the place of operation. The court held that, upon the whole evidence, a finding that the pack was left in 1917 would have as much support as a finding that it was left in 1920, and as a verdict cannot rest upon mere speculation judgment for plaintiff was reversed.

CHIROPODY NOT A BRANCH OF MEDICINE OR SURGERY.

The Idaho Supreme Court holds, in the prosecution of a chiropodist for practising medicine without a license, State v. Armstrong, 225 Pac. 491, that under a reasonable interpretation chiropody does not involve the practice of medicine or surgery, either major or minor. Chiropody, however, has some relation to the public health and may be regulated by the Legislature. Such regulation must be reasonable, and must bear some relation to the object sought to be attained, which is to protect the public from being mistreated or misled by incompetent or unscrupulous practitioners. To require a chiropodist to obtain the education and license of a physician and surgeon, an osteopathist or a chiropractor, is held not to be a reasonable regulation, and utterly unnecessary for the protection of the public.

Idaho, Sess. Laws 1923, provides that it shall be unlawful for one to treat any physical condition of any person for a fee. It is held that the general language used in the cat would make it apply to chiropody, and in so far as it does affect the practice of chiropody, the act is unconstitutional and void.

The acts charged against the defendant were the removal of corns and callouses and the treatment of a Morton toe by binding and strapping the foot. The court was of opinion that the former constituted chiropody, but was not so sure about the latter. If that fell within the scope of medicine and surgery, the defendant would be guilty. The stipulated facts did not make possible an intelligent answer to this question, and judgment of conviction was reversed for a new trial.

BREAKING OF NEEDLE DURING REMOVAL OF TONSILS.

In an action for alleged malpractice in the removal of plaintiff's tonsils, during which a hypodermic needle broke, the first specification of negligence, that the doctor should have used a general anaesthetic and not a local one, was held negatived by expert testimony that the general practice is to use a local anaesthetic instead of a general one, in removing tonsils from an adult.

The second specification of negligence was that the defendant should have known of the breaking of the needle and at once informed plaintiff. Defendant testified that he did know, but judged it proper not to inform plaintiff until she had an opportunity to recuperate through rest and sleep.

On discovering that the needle had broken, defendant's efforts to extract it failed and he decided to proceed with the operation. It was held that the correctness of his judgment was subsequently shown by the fact that the part of the needle which had broken off could not be found in the tissues of plaintiff's neck without the aid of X-ray plates, and after its position had been ascertained the efforts to remove it were not successful.

Malpractice was held not shown by the fact that the needle broke, or that part of it remained in plaintiff's body.—Mandelbaum v. Weil, 208 N. Y. App. Div., 409, 203 N. Y. Supp., 289.

TYPHOID FEVER NOT ARISING OUT OF EMPLOYMENT.

The Michigan Supreme Court holds, Ames v. Lake Independence Lumber Co., 197 N. W. 499, that the contraction of typhoid fever is an industrial accident within the State Workmen's Compensation Act, but contracting typhoid fever by drinking water from a pipe at some distance from the place of employment without the knowledge of defendant, the owner of the premises on which work was being done by the plaintiff's employer, an independent contractor, was not an industrial accident caused by exposure to some special hazard incidental to or arising out of his employment; and an award of compensation was set aside.

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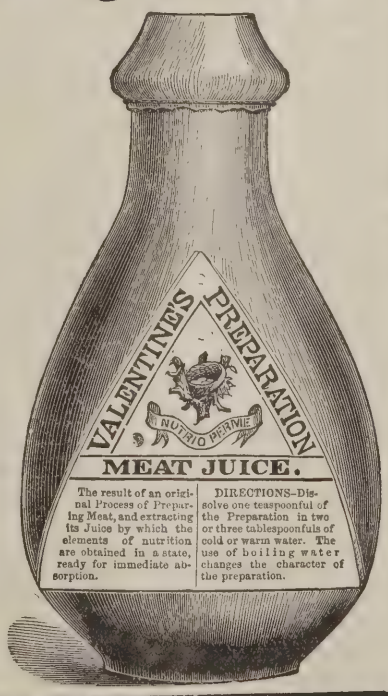
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Miscellany.

Contribution for a Marine Hospital at Bath, Me.—In 1878 a grateful patient or friend of the Marine Hospital Service (now the Public Health Service) donated $523.50 "for the benefit of the Marine Hospital at Bath, Maine." The amount was placed at interest by the Collector of Customs, and is still on deposit, because there was no Marine Hospital at Bath, Maine, and never has been, the nearest ones on that coast being located at Portland, Maine, and Boston, Massachusetts. Practically all cities in the United States are increasing in size, and the city of Bath is no exception to this rule. It is not at all improbable that the time may come when a new Marine Hospital will be needed on the Maine Coast to serve those who go down to the sea in ships, in conformity with the Government policy established in 1798 to provide medical care for merchant seamen. Students of compound interest may compute the period necessary for the donation to grow to the necessary amount.

Vaccination Two Thousand Years Old.—Vaccination is an outgrowth of man's effort to protect himself from pestilence by using nature's methods of defense. Primitive man noticed that recovery from a first attack by most diseases gave immunity against other attacks; and, some two thousand years ago, he began to inoculate his fellows with smallpox when conditions seemed propitious instead of waiting for nature to do it at some time when conditions might be very unpropitious. Inoculations against smallpox were made in India and in China as early as 300 B.C. Later, when the disease reached Europe, inoculation went with it, supplemented by a new method called "selling smallpox"—exposing a well person to contact with one ill with the disease so that, if he survived, he would be proof against it. . . . Before the days of vaccination, conservative estimates show that one third of all persons had smallpox and one tenth of all deaths were due to it. . . . Formerly, smallpox was considered a children's disease; and it still is a child's disease—where infantile and school vaccination are neglected. —*Dr. G. W. McCoy.*

The Smallpox Peril.—The history of smallpox shows conclusively that there is an ever present danger to the unvaccinated community, and in modern times this danger is intensified by the increased and rapid communication between towns and cities, says the Connecticut State Department of Health. Indeed, so rapid has travel become that a person infected with smallpox can travel almost half way around the world before the incubation period of the disease has expired. It is common in this country to find persons suffering with smallpox who received their infection in Canada, Mexico, Portugal, Sweden and other European and South American countries. The danger zone for us therefore, is any point in the world which can be reached or from which persons can arrive in from fourteen to twenty-one days, this being the period between the infection by smallpox and the appearance of the symptoms of the disease.

In Fitchburg, Massachusetts, in 1918, smallpox was imported from Canada; in New Bedford in 1919, from Portugal; and the epidemic in Worcester in 1917 which resulted in 48 cases and 10 deaths, originated in Finland. This latter invasion was particularly interesting for the reason that passengers from the ship carrying the Worcester infection were also responsible for outbreaks in New York, Minnesota and several other states.

Foreign ports are not by any means responsible for all the original infection in this country; in Connecticut in 1921 outbreaks occurred which were due to infected individuals coming from North Dakota, New York, South Carolina, Illinois and Rhode Island; and in 1924, the outbreak was due to infection from Canada.

It is fortunate that most of the outbreaks of smallpox in this country have of late years been of the mild type with relatively few deaths, but malignant smallpox with high mortality is ever present in Mexico and some of the European countries and this malignant type may at any time appear among us. Malignant smallpox is particularly liable to occur in communities where vaccination has been long neglected and where epidemics are allowed to run uncontrolled. The type of smallpox in Connecticut in 1924, one in eight being fatal, is more fatal than for twenty-five years in the state.

Diseases Under Investigation at the Hospital of the Rockefeller Institute.—The following conditions are being studied in the Hospital of the Rockefeller Institute for Medical Research; patients suffering from these diseases will be admitted to the extent of the hospital facilities:

1. Chickenpox: Either children or adults with chickenpox will be admitted to the Isolation Ward of the Hospital; it is desired that they be referred early in the disease.

2. Nephritis: Patients suffering from acute nephritis or from moderately severe or severe chronic nephritis. Young persons with these diseases, particularly those with edema, are especially suitable.

3. Rheumatic fever: Patients should be referred early in the course of the disease, preferably before receiving antirheumatic drugs. Those suffering from one or more of the following manifestations are desired: acute rheumatic polyarthritis; subcutaneous rheumatic nodules; chorea accompanied by polyarthritis or subcutaneous nodules; rheumatic carditis accompanied by polyarthritis or subcutaneous nodules.

4. Acute pulmonary infections, including acute lobar pneumonia: It is desired to receive patients suffering from atypical forms of acute infection of the respiratory tract as well as patients with acute lobar pneumonia. Patients with the latter condition should be referred as early in the disease as possible. A chamber is available in which patients suffering from severe cyanosis may be treated in an atmosphere rich in oxygen.

5. Cardiac disease: In continuing the study of the treatment of chronic heart disease, it is planned to admit patients, either young or old, in the more advanced stages of heart failure. Those having completely irregular pulse and fibrillation of the auricles are especially desired.

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the bowel contents are abnormally retained in the intestinal canal. As a result, over-digestion takes place, with over-absorption of fluids from the fecal mass, leaving them hardened and reduced in bulk. In this condition the bowel contents, failing to provide the normal stimulus to the intestinal muscles, are still further delayed in their passage, thus preventing the elimination of toxic wastes.

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Fur Dermatitis.—The report of an inquiry into the causes of fur dermatitis by Dr. Allan C. Parsons has just been issued. From a study of the literature it appears that nothing was published until 1909, and although isolated instances had been seen by dermatologists from time to time, there is no history of any aggregation of cases previous to the winter of 1922-23. Early in the latter year, Dr. J. H. Sequeira, of the London Hospital, informed the Ministry of the existence of several cases, and it was due to his initiative that it was decided to pursue further inquiries into this subject. In March, 1903, Dr. H. C. Semon, of the Royal Northern Hospital, and Dr. A. C. Roxburgh, of St. Bartholomew's, contributed papers to the medical press giving clinical details of fur dermatitis which then for the first time began to attract public attention.

It is no new experience to come across persons who are unable to wear any sort of fur without discomfort, and various chemical preservatives against moths had long been recognized as capable of producing irritation of the skin. But the sudden increase in the number of cases pointed to some new method of preparing or dyeing the skins, and the widespread nature of the socalled epidemic, suggested some common factor.

Fashions in furs change from year to year, but since the war there has been a great increase in the use of cheap varieties, and to meet the demand substitution products have been supplied. The pelt of these comes from the rabbit and is dyed to resemble beaver, the finished product being known as beaver-coney; and almost without exception this has proved to be the fur used by those who have developed dermatitis. One Manchester firm alone is said to have sold nearly twenty thousand coats, with collars of this material, in two months.

On developing the inquiry it was shown that the personal idiosyncrasy is not the paramount factor, and that the use of arsenic in the preparation of the pelt is very unlikely to be the cause; and attention was concentrated upon the dyeing of the fur, which in the end was held to be the responsible agent in the production of irritation.

But even now it is difficult to indicate with certainty the exact dye developer used in any individual case, though the Fur Trade Association and their technical advisers were unanmious in thinking that paraphenylenediamine was the agent employed in dyeing the furs complained of. And the more so since this, when used as a human hair dye, has been frequently known to produce similar symptoms.

On the other hand one analyst considered that metaphenylenediamine, an isomer of the above, which is now constantly used in the dyeing industry, was the irritant in question. These two divide between them the responsibility for producing fur dermatitis. The skin being immersed in a bath of the developer, the dye is developed by oxidation with hydrogen peroxide, the first oxidation product, whose chemical identity is undetermined, being actively irritant. The result of the inquiry shows that so long as the oxidation is complete—which ever agent be employed—the dyed article is innocuous; and that the cause of the trouble lies in defective or careless technic in the use of potentially dangerous dyes, and not in the skins themselves.—*Medical Press,* September 24, 1924.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

MIND AS A FORCE. By Charles F. Harford, M.A., M.D. New York: Henry Holt and Company, 1924. Pp. 136.

INTERNATIONAL CLINICS. Volume III, Thirty-fourth Series, 1924. Philadelphia and London: J. B. Lippincott Company, 1924. Pp. 304.

L'OS TEMPORAL. Chez l'Homme Adulte. Iconographie et Description de l'Os et de ses Cavités. Par Philippe Bellocq. Paris: Masson et Cie, 1924. Pp. 127.

MODERN METHODS OF TREATMENT. By Logan Glendening, M.D. With Chapters on Special Subjects by Various Authors. Illustrated. St. Louis: The C. V. Mosby Company, 1924. Pp. 692.

LA MATERIÈRE VIVANTE. Organisation et Différenciations Origine de la Vie Colloïdes et Mitochondries. Par J. Kunstler et F. Prévost. Paris: Masson et Cie, 1924. Pp. 252.

WHEELER'S HANDBOOK OF MEDICINE. By William R. Jack, B. Sc., M.D., F.R.F.P.S.G. Seventh Edition. New York: William Wood and Company; Edinburgh: E. & S. Livingstone, 1924. Pp. 629.

DICTIONARY OF TREATMENT. Including Medical and Surgical Therapeutics. By Sir William Whitla, M.D., D.Sc., LL. D., M.P. Seventh Edition. New York: Paul F. Hoeber, Inc., 1924. Pp. 1100.

PRATIQUE SÉMIOLOGIQUE DES MALADIES MENTALES. Guide de L'Etudiant et du Practicien avec 89 Figures Originales dans le Texte. Par Paul Sollier et Paul Courbon. Paris: Masson et Cie, 1924. Pp. 417.

HANDBOOK OF SKIN DISEASES. By Frederick Gardiner, M.D., B. Sc. (Public Health), F.R.C.S.E., F.R.S.E. Second Edition. New York: William Wood and Company: Edinburgh, E. & S. Livingstone, 1924. Pp. 248.

THE SEXUAL LIFE OF MAN. An Outline for Students, Doctors and Lawyers. By Dr. Placzek. Translation revised by W. C. Rivers, M.R.C.S., L.R.C.P., D.P.H. London: John Bale, Sons and Danielsson, Ltd., 1923. Pp. 233.

RICHTLINIEN FÜR KÜRPERMESSUNGEN UND DEREN STATISTISCHE VERARBEITUNG MIT BESONDERER BERUCKSICHTIGUNG VON SCHÜLERMESSUNGEN. Von Dr. Rudolf Martin. Mit 20 Abbildungen und 4 Taflen. München, J. F. Lehmanns, 1924. Pp. 60.

THE MORPHOLOGY AND EVOLUTION OF APES AND MAN. By Charles F. Sonntag, M.D., Ch.B., F.Z.S. With a Foreword by Professor G. Elliot Smith, M.D., F.R.S. With Fifty-nine Illustrations. London: John Bale, Sons and Danielsson, Ltd., 1924. Pp. 364.

SYSTEMATIC COURSE OF QUALITATIVE CHEMICAL ANALYSIS OF INORGANIC AND ORGANIC SUBSTANCES. With Explanatory Notes. By Henry W. Schimpf, Ph.G., M.D. Fourth Edition, Revised, by Alfred I. Cone, Phar.D., Ph.G. New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Limited, 1924. Pp. 201.

MANUAL OF PRACTICAL X RAY WORK. By John Muir, B. Sc., M.B., Ch. B., in collaboration with Sir Archibald Reid, K.B.E., C.M.G., L.R.C.P., and F. J. Harlow, B. Sc., F. Inst. P., A.R.C.Sc. With 456 Illustrations. Being a third edition of the manual by Arthur and Muir. New York: Paul F. Hoeber, Inc., 1924. Pp. 524.

TRAITEMENT CHIRURGICAL DE LA DILATATION BRONCHIQUE. Avec 31 Figures et Schémas. Par P. Guibal. Paris: Masson et Cie., 1924. Pp. 173.

MICROMÉTHODES ET SEMIMICROMÉTHODES. Appliqués aux analyses chimques du sang et des humeurs. Avec 22 figures dans le texte. Par Dr. Durupt. Paris: A. Poinat, 1924. Pp. 284.

FOUNDATION OF HEALTH. A Manual of Personal Hygiene for Students. By William Barnard Sharp, S.M., M.D. Illustrated. Philadelphia and New York: Lea and Febiger, 1924. Pp. 256.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 10 NEW YORK, WEDNESDAY, NOVEMBER 19, 1924 WHOLE No. 2293

Upper Abdominal Postoperative Infection

HOWARD M. CLUTE, M.D.,
Boston.

The occurrence of suppuration in the upper abdomen following trauma or operation is not infrequent, but the recognition of this condition is often long delayed or completely overlooked.

Since the publication of a recent paper on subphrenic abscess (1), I have operated upon four further cases of this type and two others have been seen. Obviously the condition is not rare and more attention should be given to the possibility of subphrenic or subhepatic infection in cases which are not doing well after operation.

Subphrenic abscess is not a disease which always presents outstanding diagnostic features. We find that with our increasing familiarity with this lesion we now suspect it until we prove it is not present in cases which do badly after operation. We are certain that in Case VII we would not have made a diagnosis had we not persisted in directing our efforts distinctly toward proving the presence or absence of a subphrenic abscess.

In common with other surgeons, we have found that when a continued fever develops in a postoperative case the trouble lies, ninety per cent. of the time in the wound of operation. Continued fever after an abdominal operation means that we must disprove the presence of the following things: 1, wound infection either superficial or deep; 2, abscess formation in the pouch of Douglas; and 3, subphrenic infection.

Abstracts of the histories of nine patients who showed evidence of the last named cause of postoperative fever are presented. Seven of these patients had suphrenic abscess. One showed a bile peritonitis following cholecystectomy and one presented multiple abscesses of the liver.

CASE REPORTS

CASE I.—A. P. Bullet wound of abdomen. Wound of entrance over xiphoid process; wound of exit over right posterior iliac spine. No symptoms of any sort until several weeks after the injury. Patient then began having daily fever which increased in severity and persisted. Some fullness and lack of mobility of the right chest. Pain with deep (fist) percussion. Marked loss of weight and strength. X ray showed right diaphragm high and fixed. Needle puncture revealed pus. Operation; two stage drainage. Recovery.

CASE II.—Mrs. L. Operated upon for perforating appendicitis with diffuse peritonitis. Appendectomy with abdominal drainage and an enterostomy were performed. Ten days after operation patient began having fever which persisted. Toxic psychosis developed. Abdomen showed some fullness in the upper right quadrant. Some edema over the skin posteriorly. Rectal and vaginal examination negative. X rays showed high fixed diaphragm on the right with a clear costophrenic angle and a definite gas bubble with fluid line below the diaphragm. This abscess was drained by the two stage method. Recovery.

CASE III.—Mrs. M. Operated upon for a ruptured appendix with diffuse peritonitis. Four days after operation persistent fever developed with no abdominal signs save tenderness in the right upper quadrant. Later some bulging just below lower ribs in the midaxillary line. A large subphrenic abscess was incised below the rib margin in the right axillary line. Recovery.

CASE IV.—Mr. B. A. Operated upon for large pyloric ulcer. A Polya operation was performed. Ten days later rise in temperature developed. This varied daily between 97.6° and 103 or 104°. He had no abdominal signs save some fullness over the right upper abdomen and deep tenderness. There were some râles over the right base with bronchovesicular breath sounds. A large subhepatic abscess lying along the right lateral colic groove was incised below the rib margin in right midaxillary line. Recovery.

CASE V.—Mrs. W. Operated upon at another hospital for acute cholecystitis with gallstones. A cholecystectomy was performed. On the third day after operation the drain was removed. A few days later fever began which persisted. Examination was entirely negative save for dullness over the base of the right lung. Deep tenderness over the liver anteriorly with some fullness of the upper right abdomen. X rays showed a high fixed right diaphragm. A large subphrenic abscess was drained by the two stage operation. Recovery.

CASE VI.—Mrs. W. E. L. A cholecystectomy was performed on this patient and a badly infected gallbladder full of stones was removed. Recovery was uneventful until the sixth day after operation, when her temperature began to rise. On the twenty-first

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day after operation she had a fever of 103.6°. She presented some tenderness in the right flank and some deep tenderness over the liver. X rays showed a high fixed right diaphragm. Hot poultices were applied over the right upper abdomen and a probe inserted into the drainage track remaining from the cholecstectomy. In a few days much purulent discharge came from the wound and the excessive temperature cleared up. Later x rays showed improvement in the relative position of the diaphragm with a final return to normal. This was undoubtedly a beginning subphrenic abscess which was drained through the original drainage tract and cleared up. At the time this patient was in hospital we took x rays of the diaphragm of several patients who had recently had a cholecystectomy. In no case was the diaphragm either high or fixed in its motion.

Case VII.—Mr. B. This man fell three feet and struck his right loin against the point of a pickaxe. He sustained a small wound in the right midaxillary line, just above the iliac crest, which healed in a short time. Ten days later there developed a moderate rise in temperature which rapidly grew more severe. In the hospital he showed no abdominal symptoms, but closely resembled an empyema. His temperature ranged from 104° to 105° and his respirations were 35 to 40. He presented well marked dullness over his right base with bronchial breath sounds just above. The heart was pushed well over to the left. There was some fullness over the right upper abdomen with deep tenderness on fist percussion. Repeated x rays were indistinct and no definite elevation of the diaphragm could be seen because of the general haziness over the right chest. Two chest taps were done, with negative results. A needle was then inserted on a later date between the ninth and tenth ribs in the midaxillary line on the right because we felt sure subphrenic abscess was the most reasonable diagnosis. At a depth of four and one third inches, pus was obtained. A large subphrenic abscess was drained by the two stage operation. Some days after the second operation the patient had a severe coughing spell and spat up several ounces of thick odorless pus. He continued to cough up this pus for some days. X ray of his chest showed no new pathology. He soon improved and ultimately made an excellent and complete recovery.

Case VIII.—Miss W. Three weeks prior to admission a cholecystectomy was performed in another city. The drain was removed a few days later and after two weeks the patient returned to her home. One week ago rise in temperature developed which persisted. Examination showed a very sick, emaciated girl with a high fever. Some abdominal fullness. Tenderness especially over the lower border of the liver, edema over the right loin posteriorly. We believed this girl had a subphrenic abscess following her cholecystectomy. X rays, however, showed a normal diaphragm on each side as to height and excursion. A small incision was made over the right lateral abdomen below the rib margin. Several large pockets of cloudy bile were found and drained. A catheter was sewed into a piece of distended gut and the belly closed. This girl had a bile peritonitis largely localized to the right upper abdomen but below the liver. She died after her second operation.

Case IX.—Mr. L. A man of forty-eight who had been sick with persistent irregular fever for three months. Recently he had spent several weeks in another hospital, where every method of examination, including an exploratory laparotomy, had been made use of without reaching a diagnosis. In this case no known cause for a possible subphrenic abscess could be found. X rays of the chest, however, showed that the diaphragm was markedly elevated and fixed on each side. There was some fullness and restricted motion in the right upper quadrant with tenderness to deep percussion. Needle puncture in the right midaxillary line in the ninth space gave foulsmelling pus. Under local anesthesia the first stage of a drainage operation was performed. Thirty-six hours later the patient became deeply jaundiced, had several chills and passed away in about eight hours.

Autopsy showed multiple abscesses of the liver varying in size from a very minute focus to cavities 1.5 cm. in diameter. No etiological factor could be found.

The outstanding point in every case which led us to consider the possibility of a subphrenic abscess was the history of an abdominal injury or operation and subsequent continued fever not readily explained. Because of this, we admit to having looked for a subphrenic abscess many times in vain. On the other hand, we believe we have not overlooked one in recent years.

In Case VII there was a wound of the right loin with a pickaxe. The wound healed and the patient did well for two weeks, when he developed a daily fever that grew steadily worse. In Case V a cholecystectomy had been performed and the drainage removed on the third day. A week later persistent fever developed with mild abdominal distention. In Cases II and III a gangrenous appendix had been removed with improvement for a time. Later fever and marked prostration developed with no remarkable abdominal or rectal signs. In two cases we had bullet wounds of the upper abdomen followed by fever of long duration. Case IV was a resection of the pylorus with excellent recovery for fourteen days, when fever developed with some upper abdominal fullness and tenderness. Thus in every instance in this series there is a history of preceding trauma which becomes of great importance when later complications arise.

The second important feature in all these cases has been the lack of localizing symptoms recognized by the patient. In some cases there has been a sense of epigastric fullness. In one instance there was some pain with deep breathing.

Every case has had well marked fever which, in general, has been of the picket fence type with a wide daily range of temperature. Loss of weight and strength have been unusually marked in every patient whose illness was at all prolonged. Neither diarrhea nor constipation has been a feature of any case. Vomiting has not occurred in this series.

The physical signs present in these patients have been quite constant. Most noticeable has been the limitation of motion of the right chest with respiration. At the base of the right lung there has been some dullness due to the presence of sterile fluid in the pleural cavity and to the compression of the lung

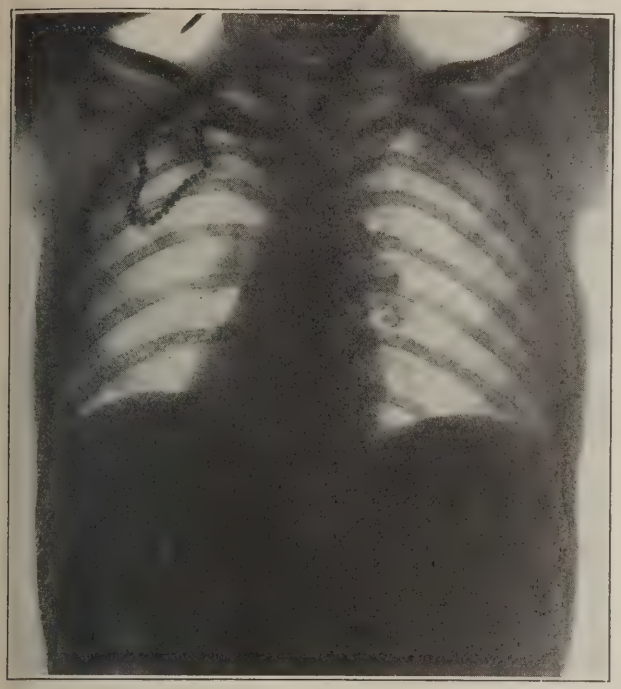

FIG. 1.—Case VIII. Bile peritonitis after cholecystectomy. Subphrenic abscess was ruled out in this case by the normal relative position of the right and left sides of the diaphragm.

by the high diaphragm. Pain on deep percussion or "fist percussion" (Murphy) has been very constant and we consider this a very important sign when it is present. Edema of the subcutaneous tissue over the right lower back has occurred twice. We have once seen the apex of the heart pushed well over to the left by a moderate sized subphrenic abscess on the right (Case VII). It returned to its normal position after drainage of the abscess.

We consider a typical x ray picture of the greatest value in making a diagnosis of subphrenic abscess. The diaphragm of the affected side will be found high, smoothly rounded and fixed. Its normal excursion of two or three inches will be reduced to a quarter of an inch. The costophrenic angle will generally be clear, but this picture may be clouded by accompanying fluid or bronchitis in the right chest. In a few cases a gas bubble will appear just under the diaphragm with a straight line fluid level below when the patient is in the sitting position. This has occurred in but one case in this series.

In Case IX we found the diaphragm high and fixed on both sides. This was not consistent with a subphrenic abscess, but when considered with the clinical symptoms it did point to pathology below the diaphragm on each side. The finding of multiple abscesses in each lobe of the liver at autopsy confirmed this belief. In Case VIII we found many clinical symptoms which made us believe a subphrenic abscess was present. The history of a cholecystectomy three weeks before; of irregular fever beginning after two weeks of normal postoperative convalescence; the presence of fullness and deep tenderness in the upper right quadrant; and edema of the superficial tissues over the right loin were all consistent with a subphrenic abscess on the right side. An x ray, however, showed both the right and left side of the diaphragm at a normal level. This ruled out the presence of a pathological condition in the immediate neighborhood of the diaphragm.

It is, of course, well known that the diaphragm is occasionally found high and fixed with a rounded domelike surface on one side when no abdominal pathology can be demonstrated. We have seen one such picture in a chest x ray taken to determine the presence of an intrathoracic goitre and we were unable to discover any clinical symptoms referable to it. Paralysis of one side of the diaphragm with consequent elevation and lack of mobility is seen very rarely by the x ray men. It may be congenital in origin or it may arise from a precedent disease or injury of one phrenic nerve. This lesion offers little difficulty in the diagnosis of subphrenic abscess because of its rare occurrence and the lack of accompanying symptoms.

When the history and physical findings point to the diagnosis of subphrenic abscess but are not conclusive, we resort to an exploratory puncture with a long needle. We have made such a puncture in four cases in the midaxillary line at the eighth or ninth space to confirm our belief when other measures were insufficient for making a diagnosis. We believe that tapping in this location should be done with great care and only when other positive diagnostic signs fail. We have seen no ill effects from it.

We use a lumbar puncture needle with a syringe attached. Under novocaine anesthesia, the needle is inserted in either the ninth or tenth space in the right midaxillary line. Usually the pus will be found at a depth of two inches or less in thin patients, though it may be advisable to push the needle farther in if reasonably certain that pus is present. In Case II we obtained foul smelling gas and only a little pus with aspiration. If the puncture is made at a level higher than the ninth space, the needle may pass through the pleural cavity at a point where the parie-

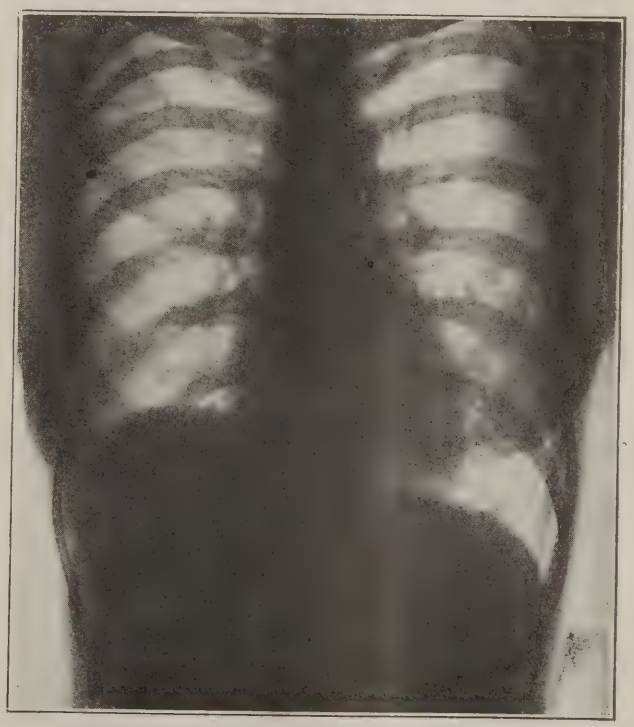

FIG. 2.—Case IX. Right subphrenic abscess. Note high, fixed diaphragm on the right with evenly rounded dome and clear costophrenic angle.

tal and visceral pleura are not in contact. Clear serous fluid from the chest cavity may thus be obtained on aspiration followed by pus as the needle passes through the diaphragm. This occurred in Case I. Infection of the pleural exudate may well follow this procedure. If serous fluid is obtained with tapping, therefore, the needle should be withdrawn and inserted in the next lowest interspace.

Recovery from infection in the subphrenic space demands, 1, the establishment of early and wide dependent drainage, and 2, the prevention of infection of the adjacent serous cavities with consequent empyema or peritonitis. In two cases in this series a palpable tender mass presented in the anterior axillary line just below the costal margin. In such a case an incision should be made below and parallel to the last rib over the mass and the abscess carefully drained. The general peritoneal cavity in such a case is not liable to contamination. In all the remaining cases of subphrenic abscess we have found the two stage operation described in our previous paper entirely satisfactory. In the first stage two or three inches of the right ninth or tenth rib in the posterior axillary line is removed. The parietal pleura is opened and sutured to the diaphragm. The wound is packed with sterile gauze and left for forty-eight hours. This walls off the pleural cavity. In the second stage of the operation, the diaphragm is incised through this wound and the abscess cavity drained with a rubber tube.

Neither empyema nor peritonitis has occurred in this series of cases of subphrenic abscess. All patients made excellent recoveries.

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The Pineal Gland and Its Function

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This peculiar gland lies between the anterior quadrigeminate bodies, just above the sylvian aqueduct and weighs about 0.2 gram. It is largest in the early years of life and undergoes retrogressive changes after puberty. Microscopally it consists of epithelial cells arranged loosely in trabeculæ with long sinuslike capillaries between them. Neuroglia and sometimes muscular fibres are also present. Curious globules of calcareous material (brain sand) are also found in it. This is especially true in the pineal of man. Contrary to the statements recently seen in the lay press it does not calcify at thirty, or, for that matter, at any other age. The same calcareous changes that occur in the arterial walls seem to occur in the pineal. In later life these sometimes become sufficient for the pineal to cast a shadow in x ray films of the skull. That this is only an occasional occurrence is shown by the fact that few of us have ever seen such a shadow while all of us have seen a great many x ray pictures of the head. It is developed from the evagination of the third ventricle and is homologous with the socalled reptilian mideye.

Most investigators, clinicians and experimental physiologists alike, agree that the pineal is a gland of internal secretion, that it has some relation to the other endocrine glands, and that its sphere of influence is exerted on the body and sexual growth. The exact nature of this influence, whether inhibiting or stimulating, is a question which is not agreed on. One group of observers believes that the gland produces a secretion which inhibits the growth of the body and restrains mental and sexual development from exceeding the rate accepted as normal for preadult life, while the other group holds that this secretion has a stimulating effect in the same sphere.

Our scant knowledge of its function has been obtained in three ways. First, by removing it in young animals and ascribing the changes that follow this operation to lack of function of the pineal. Second, by noting the train of symptoms that occur in the presence of tumors of the gland in children. Third, by feeding experiments, the dried gland being fed to animals both laboratory and human.

Extirpation experiments. In most cases where the gland has been successfully removed it has been found that the body growth is stimulated and that the sexual characteristics develop more quickly than in the normal controls. The work of Dandy of Baltimore does not agree with this. He devised a new approach to the pineal involving a minimal amount of brain trauma. He removed the gland from puppies and kept them in apparently perfect health for months afterward. Neither the clinical history nor the autopsy disclosed any evidence that complete extirpation of the pineal had any effect on puppies.

SYMPTOMS ACCOMPANYING TUMORS OF THE PINEAL

It is an interesting fact that tumors occur much more frequently in boys than in girls and that they usually occur before the age of fourteen. Teratoma, which is a rather rare tumor form in any location, makes up twenty-five per cent. or more of all tumors of the pineal. There is a rapid body growth so that a child of six or seven years may have the appearance of a child near puberty. A precocious growth of pubic and general body hair, enlarged genitalia, early sexual development and early change in voice. Precocious mental development manifested by a maturity of thought and speech. Besides these things that are peculiar to pineal tumors there are the usual signs of increased intracranial pressure and the symptoms due to pressure on surrounding structures of the brain.

One group of observers have attributed the symptoms in the case of tumors to a deficient function of the pineal, it being assumed that the tumor destroys the pineal tissue and that the accompanying metabolic and neurological disturbances occur as a result of lack of pineal secretion. Another group of observers hold the opposite view, that the tumor causes an increased amount of pineal secretion to be produced and that the symptoms are due to a hyperfunction of the gland. Dana and McCord especially hold this view. Knud Krabbe believes that we may recognize a clinical picture in which pubertas precox coincides with teratoma formation in the pineal. Thus we may be permitted in a number of brain tumors in children to diagnosticate with great certainty that the tumor is a teratoma of the pineal. Krabbe expresses no opinion as to whether the tumor causes an increase or decrease in the amount of pineal secretion.

Feeding of pineal has been done on a considerable scale by Berkeley. He claims accelerated somatic growth in kittens, rabbits and guinea pigs, while a number of backward children to whom the gland preparation was administered for sufficient periods of time made an advance in mental age considerably in excess of any previous progress for a like period. The fresh glands of young bullocks were rapidly dried, mixed with milk sugar and put up in capsules, each capsule corresponding to one hundred and fifty pounds of bullock live weight. The ordinary dose for a child weighing twenty-five to fifty pounds was two capsules a day. He also found that when the pineal gland was fed to babies it caused an increase in the metabolic activity as evidenced by an increase in the nitrogen in the urine.

It is reported by others that the administration of pineal substance to young mammals hastens growth and sexual maturity.

Following are some of the theories that have been advanced regarding the function of the gland. Dana and Berkeley believe that the pineal furnishes a ferment or catalytic agent which facilitates the exchange of nutrient material by the brain cells.

DeLyon advances the idea that the gland has a mechanical function regulating the inflow and outflow of the cerebrospinal fluid from the third ventricle. While this theory has not been substantiated the finding of striped muscle fibres in the pineal of cattle attaches some significance to it.

Cushing and most others believe there is a definite relation between the pineal and the sex glands; but do not agree as to what this relationship is. McCord and Allen state that the pigment cells (melanophores) of tadpoles become contracted after pineal feeding. As the receptors of the reflex governing such reactions of various animals are situated in the retina these investigators give significance to their observations by correlating them with the fact that the pineal is the homologue of the reptilian mideye.

McCord states that the essentials of pineal pathology are as follows: 1, early sexual development, enlarged genitalia, precocious growth of pubic and general body hair and early change in voice; 2, precocious mental development manifested by a maturity of thought and action; 3, general overgrowth of the body to the extent that a child of six or seven years may have the appearance of a child near puberty. Timme believes that disturbances of the pineal play an important part in the pathology of progressive muscular dystrophy.

It is not difficult to differentiate a pineal disturbance from an overactivity of the pituitary especially the anterior lobe which it would most closely resemble. The pituitary overactivity leads to an over development of the body but it does not manifest itself, as a rule, as early as the pineal disturbance. There is no early maturity of the sexual apparatus and no precocious development of the body or pubic hair or of the mentality.

The author's experience with this gland has been limited entirely to the administration of the dried gland to underdeveloped children. The results so far have been nil. My feeling at this time is that our knowledge is so limited and the views regarding its function so conflicting that it has very little interest for the average practitioner. Our knowledge at this time would permit us to recognize certain rare brain tumors in children as being teratoma of the pineal. Such an opportunity would hardly occur more than once in the life of the average man.

So far as we know it does not calcify at thirty or any other age. There is little or no evidence to support the statement recently appearing in the lay press that it has anything to do with regulating either judgment or emotion or their interplay. Neither is there any evidence that pineal pathology has any relation to criminal tendencies in either the young or the old.

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Outdoor Sleeping in Winter for the Sick and the Well

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New York.

The fall campaign number of the Bulletin of the National Tuberculosis Association contains a most interesting news item. It is printed under the title, National Tuberculosis Association Inaugurates Winter Outdoor Sleeping Campaign. Among other things it says, "While the campaign is for rich and poor alike it must of necessity be aimed at the well to do, for it is the latter who can best afford to sleep outdoors comfortably in cold weather."

If I did not know that the publicity director and all those connected with the publication of the Bulletin of the National Tuberculosis Association had the welfare of the masses at heart, I confess that the foregoing sentence would be rather depressing to me. To the uninformed it might seem that the association cares less for the welfare of the poor than for the rich, but having been associated with this society and its activities from its very inception, I can vouch for the contrary. The officers and members of the association, knowing only too well that tuberculosis is a disease of the masses, have always been most eager to reach those in greatest need of their assistance, i. e., the poor and less well to do.

The statement has gone out in print, however, and no doubt has been copied and thousands have read it. This is why I desire, by the publication of this article in the widely read MEDICAL JOURNAL AND RECORD, to counteract whatever unfortunate effect has been caused by this statement. All connected with the National Tuberculosis Association, in any capacity whatsoever, know that the poor are just as much in need of outdoor sleeping as the well to do. In fact, the men or women who work all day in shop or factory do not get the best of air during working hours, and for them the better, purer, less dusty night air will prove as much a godsend as to the rich who can afford outdoor sleeping porches, verandas, or outdoor tents and other expensive and elaborate devices, such as electric heaters, costly woolen blankets, and other means.

I am happy to be in a position to suggest to physicians for their poorer patients and to the not "well to do" healthy individuals a method of outdoor sleeping without veranda, without balcony, without outdoor tent, or the like. It consists of my modest invention, the indoor window tent, of which I presented the first model to the medical and lay public in February, 1905, and the description of which appeared in the NEW YORK MEDICAL JOURNAL of March 4, 1905. The tent, the mechanism of which has been improved from time to time, is no longer a patented article. An ungrateful and unscrupulous assistant of mine had patented my tent for selfish purposes shortly after I had shown it to the profession in as nearly perfect a model as possible, at a meeting of the New York Academy of Medicine. This patent made the price for the simple device so high that it was impossible for poor patients to purchase the tent. My protest to the Commissioner of Patents that the device was my invention and that it was against all medical ethics to patent lifesaving devices, and that the tent was mainly intended for the consumptive poor living in tenement houses, was respectfully but regretfully considered. The patent had been taken out in legal form and granted before I was made aware of it. I am glad indeed to announce today that by a recent decision of the Commissioner of Patents, Department of the Interior, the patent has expired and that the device disclosed therein has become public property and may be manufactured and sold by any one.

Anybody who wishes to enjoy the outdoor open air at night can do so even if he has only one room. If he is handy with tools, or has a friend who possesses this accomplishment and is willing to help him, he can soon construct my window tent, simplifying or modifying it in any way, without fear of being prosecuted for infringing on patent rights. The following is a simple description of the device which can be constructed for a few dollars:

The window tent consists of an awning, which, instead of being placed outside of the window, is attached on the inside of the room. It is so constructed that the air from the room cannot enter or mix with the air in the tent. The sleeper lying in the bed, which is placed parallel with the window, has his head and shoulders resting in the tent (Figs. 1, 2 and 3). By following the description (Fig. 4) closely, it will be seen that the ventilation is as nearly perfect as can be produced in so simple a device. The tent is attached to the frame of an American window, but it does not quite fill the lower half. A space of about three inches is left for the escape of the warm air in the room. By lowering the window, this space can be reduced to one inch or less, according to need. On extremely cold and windy nights there need not be left any open space at all above the tent frame. The sleeper's breath will rise to the top of the tent, the form of which aids in the ventilation. The tent is constructed of a series of four frames, made of Bessemer rod suitably formed and furnished with hinged terminals; the hinges operating on a stout hinge pin at each end with suitable circular washers interposed to insure independent and easy action in folding the same, the Bessemer rod being hardened to make a stiff, rigid frame to insure its maintaining the original form.

The frame is covered with extra thick yacht sail twill, or similar material, properly fitted, and having elongated ends to admit of their being tucked in under and around the bedding to prevent the cold air from entering the room. The sleeper enters the bed and lowers the tent over himself with the aid of a cord and a little pulley attached to the upper portion of the window. By this means he also raises the window tent when wishing to get out of the bed. Shutters or Venetian blinds, whether they are attached on the inside or on the outside of the window, can be utilized in conjunction with the window tent as a screen to intercept the gaze of the neighbors, and

FIG. 1.—Dr. Knopf's window tent, when in use. Interior view of bedroom.

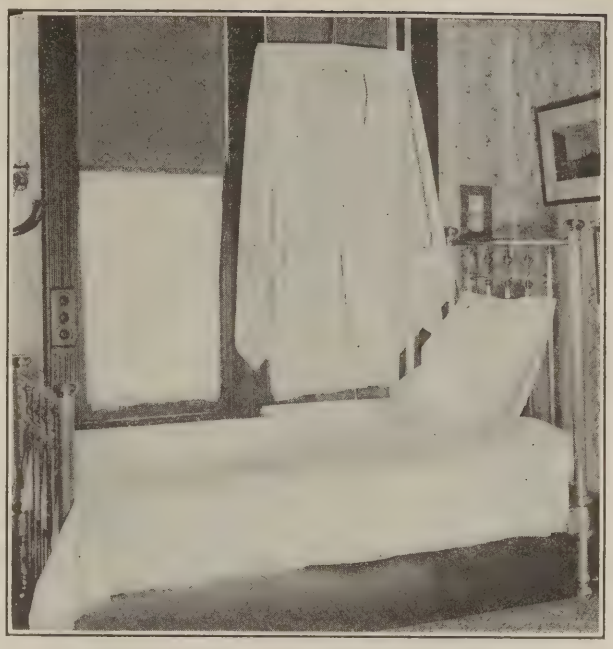

FIG. 3.—Window tent, when not in use, removed by pulley arrangement.

in stormy weather as a protection. The bed can be placed by the window to suit the sleeper's preference for sleeping on his left or right side, so that he has the air most of the time in his face. Another advantage of the window tent is that it will not attract attention from the outside. The bed being placed alongside of the window will be convenient for the majority of the poor who have small rooms. If, however, the bed must be placed at a right angle to the window, this can be arranged as well. A piece of transparent celluloid is placed in the front of the tent to serve as an observation window for the nurse or members of the family to watch the sleeper in case of illness. It also serves to make the occupant feel less outdoors and more in contact with his family, as he can, if he desires, see what is going on in the room. If the bed must be placed at a right angle to the window, the observation glass can be put in on either side. It goes without saying that one should not smoke in the tent because of the danger of the celluloid window becoming ignited. I prefer celluloid to glass, because there is no danger of its breaking when the tent is raised or lowered.

If it is necessary to raise the bed to the height of the window sill, this can be done with little expense. If the bed is of iron, a few additional inches of iron piping can be attached to the legs by any plumber or one handy with tools; raising a wooden bed can be accomplished with equal facility. If the window tent is to serve only during the night, the tent can be pulled up and the bed moved away from the window during the day, and the window closed. Or the tent can be taken from the hooks and put out of the way.

FIG. 2.—View of the window tent, seen from the house opposite.

The folding of the tent and the pulley arrangement are of course not absolutely necessary. A rigid frame can be constructed so as to retain the form with very much less trouble and with a great deal less expense. A cross piece of wood at the top attached to the window frame by a hook at each end, and connected to another cross piece at the bottom by about three curved hoops, giving the form of the tent, will make a good support for the covering. Stiff wire may also be used for the hoops and the covering may be of any material that is sufficiently airtight (Fig. 5).

The window tent, of course, is of greatest service in winter, whether to the well or to the sick. In hot weather the tent is likely to become stuffy, there being little difference in the temperature of the air in and outdoors to aid in the circulation. In cold weather, however, it is ideal, and if the sleeper is not feeling well, or is actually sick and feverish and his stay in bed is advisable, he can spend his entire time in the tent.

Those unaccustomed to sleep out of doors will often complain that the bright light awakens them too early in the morning, and that they have difficulty in going to sleep again. In such instances I counsel to have some light weight but dark colored material (such as a black lisle thread or cotton hose) to put over the eyes.

It will be observed that by merely closing the window and raising the tent the sleeper finds himself in a warm room, ready to wash and dress, refreshed for his daily task by a good night's rest in the freshest and purest air possible.

Since it has been demonstrated that pure, fresh and cold air by day and by night is most valuable,

not only in tuberculosis but also in many cases of pneumonia, the window tent may serve also in such cases. It has been advantageous in certain nervous

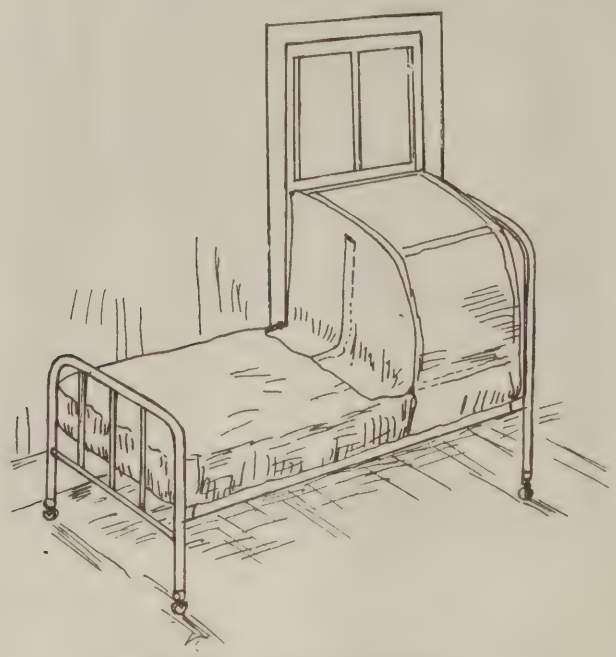

FIG. 4.—Diagram showing ventilation of window tent.

afflictions and anemia. In fact, in order to remain well and strong and guard against disease, sleeping in the fresh, pure air is perhaps one of the best known means. The appeal for winter outdoor sleeping in the Bulletin of the National Tuberculosis Association justly concludes: "The lungs that inhale outdoor air for eight hours out of twenty-four are not a fertile field for the tubercle bacillus." The window tent may be helpful where the sleeping on roof or veranda is not feasible. In a well constructed window tent it is utterly impossible that there could be any draught, nevertheless the sleeper should be warmly clad and should especially protect the upper portion of his body which is in the tent.

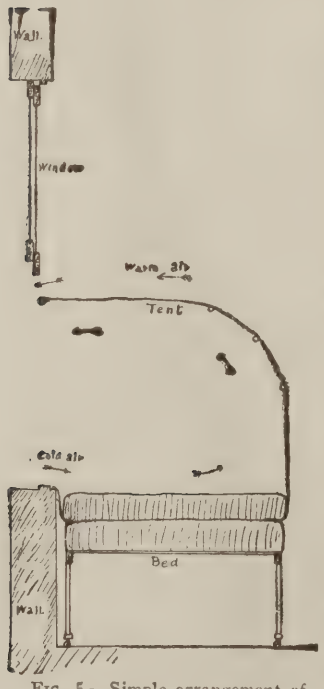

FIG. 5.—Simple arrangement of a window tent.

My own personal experience in sleeping outdoors for many years at all times of the year, even on extremely cold nights in the city in my window tent, has taught me a few things about the necessity of being properly dressed and prepared when sleeping outdoors in excessively cold weather. Even warm coverings and night gowns or robes will not keep the body sufficiently warm unless one wears closely fitting drawers and undershirt or union suit of cotton flannel. It may be, however, that wool is preferable for some. Individualizing is here as essential as in many other things appertaining to the prevention or cure of disease. The sleeper must have a sufficient number of blankets to assure his absolute comfort and warmth throughout the night. Still, the covering should not be so heavy as to press down upon the body and make one feel uncomfortable. To the poor, whose disposal of blankets is, alas, often limited, it may be good advice to tell them to put several layers of newspapers between the coverings, or to sew half a dozen layers of papers between two layers of flannel will make a cheap, light and warm covering. The feet must be kept warm with the aid of hot water bottles or heated sand bags. Even when the weather is only moderately cold, to have the bed warmed before entering it will be found pleasant and help to induce sleep. In extremely cold weather, while sleeping in the window tent, one should dress, so to speak, for the occasion, protecting one's head and ears with a woolen cap, shawl or woolen helmet, such as is shown in Fig. 6. Some will not feel the cold in their face, no matter how low the temperature, except in the tip of the nose. A simple way to keep this portion of the olfactory organ warm is to put over it a piece of absorbent cotton and fasten it with the aid of a strip of adhesive plaster along the crest of the nose, taking care not to occlude the nostrils.

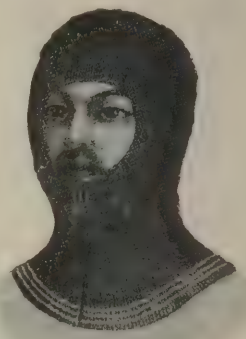

FIG. 6.—Woolen hood for outdoor sleeping in winter.

I am grateful to the late Dr. Theodore C. Janeway for having called my attention to a good method of protecting the shoulders which, with the ordinary arrangement of pillows, are insufficiently covered in extremely cold weather. The same method had been described in the *Journal of the Outdoor Life*, from which I quote as follows: "In the ordinary arrangement an open space is almost sure to form between the pillows, the bed clothing, and the shoulders, allowing the cold wind to blow down one's back. A good way to avoid this is to arrange the two pillows in the shape of a narrow V, with the apex at the head of the bed and the other ends reaching down underneath the clothing. With this arrangement one places his head upon the apex of the V, with his one shoulder between the pillows; the pillows can then be tucked closely up on each side, the covers lie closely down upon them, and no air space can form. This arrangement has the added advantage of making the pillows support a part of the weight of the clothing."

The article mentioned in the fall campaign Bulletin of the National Tuberculosis Association concludes as follows: "Why should not the United States become a nation of outdoor sleepers?" I take it upon myself to assure all the readers of the an-

nouncement in the Bulletin, entitled "National Tuberculosis Association Inaugurates Winter Outdoor Sleeping Campaign" as well as the readers of the MEDICAL JOURNAL AND RECORD, that the campaign is intended to reach the rich and poor alike, and I hope the publication of this article will remove any possible misunderstanding about the aims and objects of the National Tuberculosis Association, and the outdoor sleeping campaign in particular.

The majority of the readers of the MEDICAL JOURNAL AND RECORD are general practitioners who, being also the health counsellors of many patients and their families will, I am sure, be glad to cooperate in promulgating this healthgiving measure. In this way the National Tuberculosis Association's Winter Outdoor Sleeping Campaign will get a splendid start.

16 WEST NINETY-FIFTH STREET.

Determinations Necessary to Adjust Insulin Doses

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Insulin has now been used in the treatment of diabetes mellitus for a period of three years and during that time many things have been learned concerning this drug. Of the things learned, the one, perhaps, which is the most important, is the knowledge that the mere fact that the patient has diabetes is not an indication for the administration of insulin. The patients, therefore, who present themselves for treatment should definitely be placed in one of two groups, i. e., those who require and those who do not require insulin. It has been conservatively estimated that seventy-five per cent. of the diabetic cases can be controlled by the diet and limited exercise alone; so it should ever be borne in mind that the introduction of insulin did not in the least minimize the importance of careful and scientific dietary management of the diabetic patients, but, on the contrary, greatly increased the importance of it; for, except in the cases of severe acidosis or other serious complications, it is the manner in which the patient responds to the dietetic management that determines whether or not insulin is indicated.

DETERMINATION OF ENERGY REQUIREMENTS

The diabetic diet is essentially a restricted diet and while it should meet the caloric requirement of the patient, it should not exceed it. This minimum requirement will vary in different patients; however, it is thought that from twenty-five to thirty calories for each kilogram (2.2 pounds) of body weight is perhaps sufficient for the majority of cases of diabetes. For example, a man weighing fifty kilograms will require as a basal diet ($50\times30=1500$) fifteen hundred calories.

If the patient is of normal weight or below normal weight, one gram of protein may be given per kilogram of body weight daily, but in the event that he is above the normal weight for the age and height it is wise to cut the protein intake to two thirds gram per kilogram of body weight. As each gram of protein will yield four calories, the total number of calories derived from the daily protein intake will be ($1\times50\times4=200$) two hundred calories.

Diabetics who are not obese may safely take 2.5 grams of fat per kilogram of body weight daily and those who are inclined toward obesity should receive but two grams per kilogram of body weight. Each gram of fat will yield nine calories and therefore the daily required amount of fat will give ($2.5\times50\times9=1,135$) 1,135 calories.

As diabetes is a condition in which the fundamental defect lies in the fact that there is a lowered limit of utilization of glucose, an intermediary product of not only carbohydrates but of protein and fat as well, then it is essential that the diet be so adjusted that the quantity of glucose may be brought within the limits of utilization. This is accomplished by first getting the patient sugar free, which can usually be effected by an initial diet of thirty grams of carbohydrates, thirty grams of protein and thirty grams of fat daily for three days. If at the end of this time the patient is sugar free then the amounts are gradually increased until the basal requirements are approximated, during which time the urine should be most carefully watched to determine the moment sugar appears. If by this procedure a satisfactory diet can be attained without glycosuria, excessive glycemia or acidosis insulin is not indicated and the patient can be controlled by dietary measures alone. When, however, the patient does not respond to this management and the glycosuria persists when the carbohydrate given is equal to the minimum protein intake (two thirds gram to the kilogram of body weight), then insulin is indicated.

TO ESTIMATE THE INITIAL DOSE

The initial dose of insulin is based on the number of grams of sugar excreted in a twenty-four hour output of urine, one unit of insulin being administered for each two grams of sugar excreted (the method of determination to be described later). It is far better to separate the twenty-four hour output into three specimens, one from breakfast to luncheon, one from luncheon to dinner and one from dinner to breakfast of the following day. Each specimen is examined, the number of grams of sugar determined and the three sums totaled. Thus if it is estimated that there were ten grams of sugar excreted in the twenty-four hour output, then the patient would receive five units of insulin as an initial dose.

QUANTITATIVE DETERMINATION OF SUGAR IN URINE

The quantitative determination of sugar in urine is of utmost importance during the time the patient is under the insulin treatment. The quantitative method for the estimation of sugar in urine enables

us to determine the severity of the disorder as well as to follow its course under treatment. As long as the patient excretes a very slight per cent. of sugar in the urine it is an indication that too much insulin is not being administered, but should the urine continue to be sugar free, and if within from three to six hours after the treatment has been given the patient complains of sudden weakness, sweating, tremor, diplopia and anxiety or fear, it is a certain sign that the drug is either being given in too large doses or that it is being administered too frequently. Therefore by running a quantitative test for the amount of sugar present in the urine the results will be an index which will aid us to determine the amount and frequency of the dose.

A test which is both simple and accurate is one known as Benedict's micromethod. The reagent is inexpensive and stable. It consists of:

Copper sulphate (crystallized)	18.0 grams
Sodium carbonate (crystallized)	200.0 grams
Sodium or potassium citrate	200.0 grams
Potassium thiocyanate	825.0 grams
Potassium ferrocyanide (5 per cent solution)	5.0 c.c.
Distilled water q. s. ad.	1000.0 c.c.

The carbonate, citrate and thiocyanate are dissolved by the aid of heat in enough water to make about eight hundred c. c. of the mixture. Dissolve the copper sulphate separately in about one hundred c. c. of water and pour the solution slowly into the other liquid with constant stirring. Add the ferrocyanide solution, cool and dilute to exactly one litre.

Procedure: Five c. c. of this reagent are placed into a test tube and about one gram of sodium carbonate added. The solution is brought to a vigorous boil with continued gentle agitation, the tube being held in the left hand, employing a folded paper as a test tube holder. The urine is placed in a five c. c. burette and with the right hand the urine is run in, a drop at a time, until a chalk white precipitate begins to form. The urine is now run in carefully until one drop dissipates the last trace of the blue color, indicating the end point of the reaction. The height of the urine in c. c. is then read on the graduations of the burette.

Calculation: Since five c. c. of the reagent require exactly ten mg. of glucose for reduction the calculation may be made simple, the urine used in c. c. divided into one will give the percentage of glucose present. As for example: If one quarter c. c. of urine were used, $.25 \div 1 = 4$ per cent. glucose present. With this method the urine should be diluted if the percentage exceeds 3.5 per cent. To estimate the number of grams in a daily output of urine the calculation is equally as simple. If the daily output is one thousand c. c. and the amount of urine required to reduce the five c. c. of the reagent was found to be one c. c., therefore each c. c. of the urine will contain ten mg. of glucose, $1{,}000 \times 10 = 10$ grams of glucose in the daily output.

The percentage of glucose may be determined daily by this method as long as the patient is under treatment. It will not only minimize the danger of reducing the blood sugar to such a point that the condition of hypoglycemia exists, but will be an ineffable aid in ascertaining the carbohydrate tolerance.

A curve may be plotted showing the daily percentage by using the horizontal line or the abscissa upon which to place the number of tests and employing the vertical line or the ordinate upon which to place the percentage, starting at zero and running to five per cent.

The presence of acetone and diacetic acid in the urine may mean that too much fat is being ingested in proportion to the carbohydrate intake; for it is indeed the truth that fats will burn in the flame of carbohydrates, or it may mean that the carbohydrate metabolism is faulty, in which case the amount of insulin should be increased. It is therefore of great importance to determine the moment these substances appear in the urine, for it is the accumulation of these properties in the blood which result in acidosis and coma. When acidosis or coma occur in diabetics, the insulin treatment is to be begun at once without determining the effect of diet.

TEST FOR ACETONE

A most satisfactory test is the one devised by Legal. It consists of introducing five c. c. of urine in a test tube, adding a few drops of an aqueous solution of sodium nitroprusside and rendering the mixture alkaline with potassium hydroxide. A ruby red color results which is either due to creatinin, a normal urinary constituent, or to acetone. Add an excess of acetic acid; if acetone is present the red color will be intensified, whereas in the absence of acetone a yellow color results. A control test on normal urine will show that this is true.

TEST FOR DIACETIC ACID

A simple method for determining the presence of this substance in pathological amounts in the urine is by means of the ferric chloride test of Gerhardt. The technic is as follows: Place five c. c. of urine in a test tube and add ferric chloride solution, drop by drop, until no more precipitate forms. In the presence of diacetic acid a Bordeaux red color results.

A positive result from the above manipulation simply indicates the possible presence of diacetic acid and in order to assure one the test should be repeated, first boiling the urine, and then if the test is negative after boiling one can be certain that diacetic acid is present. A positive result after boiling indicates that the red color is due to some other substance.

Antidote for Arsenic, Bismuth, and Mercury Poisoning.—Henry C. Semon (*British Medical Journal,* April 12, 1924) obtained some very good results in cases of arsenic, bismuth, and mercury poisoning with chemically pure dehydrated sodium thiosulphate put up in ampules in doses of 0.45, 0.6, 0.75, and 0.9 gram. Although the results are suggestive of a specific antidotal action they are by no means conclusive because of the limited number of cases. If, as is presumed, the action of the thiosulphate is to neutralize the arsenic, good results can only be confidently expected if treatment is commenced immediately the toxic symptoms are apparent. The importance of early recognition and treatment of these cases cannot therefore be overemphasized. This treatment may be found to be an indispensable adjunct in the treatment of all cases of acute metallic poisoning.

A Synopsis of Physiotherapy to Date

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The equipment for a modern physiotherapy clinic should include all the recognized modalities, such as in electrotherapy, static high frequency, galvanic, faradic, sinusoidal, x rays, and ultraviolet rays (Alpine sun lamp and Kromayer lamp); in mechanotherapy, massage, Swedish movements, vibration, etc.; in hydrotherapy, Scotch douches, sprays, needle, shower, sitz, continuous aud whirlpool baths; in light and heat therapy, electric light cabinets, and a full set of radiant light and heat applicators. This outfit is used in government reconstruction hospitals, as well as in others.

Physiotherapy is really a help to establish medical and surgical treatment in any class of cases, including the insane, after first using laboratory, operating room and ward treatments, and where the reaction of the body to disease is inadequate and the disease continues, eventually becoming chronic; and the effort is made to convert this inadequate reaction into an adequate one through physiological response, and the result of the prognosis depends on the patient's response to the treatment.

Physiotherapy is a word coined by the army and includes treatment by all physical measures, and may be divided into electrotherapy, phototherapy, thermotherapy, hydrotherapy, actinotherapy, röntgenotherapy, massage and exercise.

ELECTROTHERAPY

Electrotherapy is the use of electricity in its various forms and includes galvanic electricity, the action of which current is purely chemical and is used where ionization is required for the induction of chemicals into the tissues. The positive pole has analgesic, antiseptic and hemostatic properties and repels bases, metals and alkaloids. The negative is opposite and repels acids and acid radicals. The negative will soften scar tissue and is used in treating urethral strictures, and galvanism with electric needle is used in removing hair. The faradic current is used merely in exercising muscles and improving the circulation, and abolishing local anesthesia.

The sinusoidal current is a sine wave that gradually increases from zero to its highest peak of intensity, from which it recedes back to zero. It causes powerful and painless contraction of both voluntary and involuntary muscles and stimulates metabolism. It is employed in muscle testing, in the treatment of muscle spasm, paresthesia, and paralyzed muscles. It is useful in the treatment of amenorrhea.

High frequency currents are alternating in character and of very great frequency (800 to 1,000 alternations a second) and when these currents of high voltage and frequency pass through living tissue tremendous resistance is encounted and a great portion of the electricity is converted into heat within the body, and the therapeutic result is due to the heat. This is known as diathermia, and spasm and congestion are relieved as well as other types of neuritis, and active leucocytosis induced. The two currents used are the D'Arsonval and the Oudin and can be used for autocondensation and diathermia. Autocondensation will reduce high blood pressure and is much used for that effect. The Oudin current is used in the destruction of warts and moles. The static current is soothing to the nerves, acts mechanically, and generates ozone.

PHOTOTHERAPY

Phototherapy is treatment by means of white and other lights. When light energy is stopped it becomes heat, and sunlight and other lights penetrate to the muscles and generate heat in the muscles. Light also gives off radiant heat and will accomplish all that poultices, mustard or other counterirritants will do. Hemoglobin absorbs light, and gives up its oxygen more readily than when dark. The mercury Alpine sun lamp and the Kromayer water cooled lamp have proved very efficacious in treating intractable skin diseases, infected tonsils, enlarged lymphatics, and similar conditions, and are generally included with every x ray treatment outfit. Finsen has done a great work in heliotherapy. The ultraviolet light is not only germicidal to a great degree, but also tonic in its effect. It does not pass through ordinary glass. The wave lengths are shorter than the shortest rays of the sun and are more efficient. The unit of wave measurement is called an angstrom unit.

HYDROTHERAPY

The use of hydrotherapy is too well known to admit of discussion and the only new thing is the whirlpool baths in the treatment of injured peripheral nerves, and stumps after amputation.

RÖNTGENOTHERAPY

Some time ago I read a paper on x ray treatment in which I stated the wonderful effects obtained in tuberculous glands, in chronic infected tonsils and various skin diseases—notably eczema, the tineas, psoriasis and epithelioma; also in exophthalmic goitre, and enlarged joints.

MECHANICAL VIBRATION AND MASSAGE

By this means some really marvelous results may be obtained in certain chronic diseases. Kellogg says the spine may be likened to "a harp with a thousand strings" and by accurate manipulation of certain spinal areas the function and metabolism of distant viscera in neural connection with the spinal segment, over which the stimulation is applied, may be modified at will. If vibratory stimulation is applied over the posterior branch of a spinal nerve the stimulus is imparted to the sympathetic ganglia with which it is connected, which in turn conveys the stimulus, or inhibition, to the distant viscera which it controls, thereby modifying its function.

The use of massage as a means of stimulating flabby inactive muscles, increasing circulation and

nerve tonus—besides its soothing effect—is well known and practised in all modern hospitals and sanatoria.

EXERCISE

Various forms of exercise are used in modern hospitals. These include the use of parts of the body which have been limited in their motion, from whatever cause, such as partial paralysis, ankylosed joints, contracted scars, atrophied muscles; and in the reeducation of the leg muscles of tabetics, etc.

The Army found boxing and dancing very beneficial as well as the "setting up exercises."

CONCLUSION

1. A fully trained physiotherapy aide is an essential in present day hospital or private practice.

2. Much can be done by this means that medicines alone will not reach, and the same should be duly considered.

3. The general profession should study and know these modalities and apply them, and thus weed out quacks and irregulars.

4. A complete course in physiotherapy should be given in our medical schools.

Interpretative Value of the Physical Signs of the Heart in Acute Rheumatic Endocarditis in Children*

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It is a strange fact that despite rapid strides in medicine, especially in hematology and bacteriology, the origin of rheumatism still remains shrouded in mystery. As we survey the morbidity tables of the first two decades of life we realize how deep an influence rheumatism with its manifold manifestations and complications plays upon the growing child and recognize that if we are to overcome some of the maiming effects of this disease we must at least gain more accurate knowledge of its etiology.

The importance of rheumatism is not within the disease itself but rather in its great tendency to attack the heart. If with an initial attack, an immunity would be conferred, its depredations would not be so evident, for despite a severe onslaught, the child's heart is usually capable of adjusting itself to the increased demands of the growing organism. It is this lack of immunity together with the tendency to repeated attacks on the endocardium that makes the problem of rheumatism in childhood one of prime importance.

Rheumatism manifests itself in various ways, not infrequently with such slight fleeting pains that its importance is minimized. Irrespective of the manner of onset it must be remembered that the cardium can become involved and discovered only by an incidental examination. In fact, primary rheumatic endocarditis with no other general rheumatic manifestations often occurs, and not infrequently we see patients who have fairly well developed organic lesions having no knowledge of either previous pains or febrile conditions. It is possible that in these cases a slight increase in temperature giving but slight inconvenience might have been present and overlooked, but notwithstanding, these cases prove that an acute rheumatic endocarditis can run a more or less afebrile course and escape attention of patient.

Rheumatic endocarditis is a most common condition in childhood, and although organic heart conditions may follow from other infectious conditions, the latter are so infrequently the underlying cause that it is well to look upon all acquired heart lesions in childhood as of rheumatic origin. The origin would not make any difference were the initial attack the final one; but the likelihood of rheumatic endocarditis to recurrence and exacerbations and the impossibility of measuring the severity and termination of the separate attacks, necessarily make our judgment on the prognosis and particularly the general advice on the manner of life and habits of the patient dependent on the presumption that further insult will occur. As a matter of fact rheumatism is by far the predominating cause and even though other agents may play their rôle the latter are relatively so few that it is better, for prophylactic reasons, to consider all acquired organic heart lesions on a rheumatic basis unless otherwise disproved by a history.

It is well at this point to review briefly the anatomy and physiology of the child's heart, to help us understand more clearly some of the manifestations of this disease. It will give us a clearer rationale for our interpretations of symptoms and diagnosis and what is most important a clearer insight into the prognosis and mode of treatment. The child's heart is relatively a much larger organ proportionately than the adult's, and even though the volume and weight steadily increase, the circumference at the beginning of the seventh year remains practically the same as at the end of the first year. During the first year the thickness of both ventricles is practically alike, approximately 0.5 cm., and at the beginning of the seventh year despite a steady increase of weight, the right ventricle has practically remained unchanged, while the left ventricle has instead steadily grown in thickness to approximately four to eight cm. In other words, we have an organ, compact in its make-up, steadily increasing in weight, and developing in such a fashion as to throw its entire strength into the left ventricle. Besides there is an additional factor of no little value. To the already powerful ventricles the child's arteries, which possess circumferences and elastic tissue relatively larger than in adults not only help diminish the contractive requirements of the heart but hold instead a reserve strength to be used as occasion requires.

*Read January 8, 1924, before the Society of Alumni of Lebanon Hospital, New York.

Clinically, as a result of this developmental arrangement, we should expect to find in our endocarditis cases a clinical picture not only different from that in adults, but our interpretation of the separate symptoms and particularly our prognosis should keep these added factors in view. It should constantly be borne in mind that as a consequence of these added benefits the left ventricle can usually take care of the circulation, even in moderately diseased conditions, to such an extent, that neither enlargement of the right ventricle nor accentuation of the second pulmonic tone need necessarily take place. In fact in the ordinary mild or moderate type of endocarditis we must not be surprised to find an absence of these physical signs. If these are present and show no tendency to recede after a reasonable lapse of time, we are in a position to say that the left ventricle alone is unable to take care of the circulation. As a result a poor mediate prognosis is in view, for if a child's heart at an early age indicates symptoms that the left ventricle with its powerful reserve is incompetent to take care of the circulation without producing back pressure symptoms, we can confidently expect that this same heart will be unable to take care of the demands of growing childhood, and this not taking into consideration the increasing damage and weakness that will ensue from the further recurrent endocarditic attacks that come with rheumatism.

Rheumatic endocarditis may start with frank physical signs with or without a previous history. However, just as frequently, the signs will keep themselves in the background so that the diagnosis will only be suspected. In the latter instance the first thing that draws our attention to the condition is the finding of a murmur, but as murmurs are not pathognomonic of organic lesions, it tests our acumen to decide. Of course if the lesion is definitely developed the difficulty is obviated, but in the milder cases with the physical signs confined to an indecisive murmur, particularly in the apparent nonfebrile types, our hesitation begins. A conclusion is not only important for the early precautions that can be instituted, but is of great import in the need of rearranging the entire plan of education and economic preparation to fit in with a steadily increasing infirmity rather than with the patient's social status.

Unfortunately an early diagnosis in these milder cases is not always possible, and only by careful observation may we bring the condition to light. The child's ventricle is sufficiently strong to easily take care of a slight defect in the organ to the extent that neither an enlargement of the ventricle nor an accentuation of the second pulmonic tone will occur —two important diagnostic signs.

The only sign that does present itself is that indecisive murmur; but here we are met with the difficulty of this murmur being similar in character to several other murmurs frequently heard over the precordium which are nonorganic.

For the sake of review it would perhaps be better to mention some of the more common murmurs heard over the precordium in childhood and to enumerate them according to their clinical and diagnostic importance. 1. The true acquired organic lesion usually rheumatic. 2. The various forms of congenital heart lesions. 3. A systolic murmur not organic in character heard at the base and heard more or less persistently till early adolescent life and extremely difficult to separate from a true congenital murmur. The nonrecognition of this murmur accounts to my mind at least for the occasional report of cure of congenital heart lesions. 4. The true functional murmurs heard so frequently in childhood and elicited both at the base and apex and when heard at the later situation if at all persistent, so extremely difficult to differentiate from a mild form of true organic lesion. 5. The cardiovesicular murmurs, extracardial in character yet often enough confusing for a true evaluation. 6. The murmur described by Eustace Smith in adenopathic children, and called by his name and heard prominently at the upper part of the sternum, in the region of the base of the heart.

In all these instances the murmur is usually systolic in time and while some are heard most prominently at the apex or near the apex, others are heard at the base or over the entire precordium. All with the exception of the Eustace Smith murmur, possess the property of being heard about the apex with sufficient audibility to make it extremely difficult to differentiate from the truly acquired lesion unless other concomitant signs and symptoms come to our assistance.

Even in congenital cases there are instances of mild types, where it is extremely difficult to come to a decision unless a röntgenogram or electrocardiogram comes to our aid. The electrocardiogram will give a typical curve in congenital cases, while in the acquired cases even in the mild types a partial atrioventricular bloc will sometimes be disclosed.

Again, in acute rheumatic endocarditis, irrespective of whether the endocarditis singly and alone signalizes a general rheumatic tendency or whether the endocarditis is present with other rheumatic manifestations, we again meet with difficulty. It is of little importance that a murmur is heard at the apex, because it should be borne in mind that febrile conditions in children readily call forth nonorganic murmurs and if in addition we will consider that acute endocarditis in the beginning can be present with no audible murmur and furthermore that nonorganic murmurs present before the onset of temperature will readily be accentuated, we will understand why the entire problem of early diagnosis is confusing and why many cases are improperly diagnosed. The result is that these patients are either put to bed unnecessarily or go untreated at a time when treatment is most vital.

It would seem that any injury incurred by the cardium in addition to the toxemia that always accompanies the acute cases, would produce sufficient inequality of the circulation to give at least some physical signs of the heart. However true this might be of adults, our picture is changed considerably in children because of the powerful left ventricle and unless the lesion is severe or extensive enough to give us this inequality of circulation, signs of enlargement of the heart and particularly enlargement of the right ventricle and change of character of tone, will be consistently absent, signs so prominent in older patients.

True there is enlargement, and early enlargement of the heart, but it is no more than the usual en-

largement that occurs in children's hearts under stress and with temperature, because of its high accommodative and expansile powers; but the true gradual dilatation and compensation that come with the initial inefficiency of the heart muscle and back pressure in the general circulation and in the lungs are absent. It should be kept in mind that the left ventricle under ordinary conditions is capable of taking care of the moderate lesion and when it becomes inefficient, the point to be remembered is that the left ventricle alone participates in the dilatation and compensation and not both the right and the left ventricle as is usually found in adult cases. The left ventricle, with its ability of quick compensation, is soon able to take care of the circulation so that there need be neither enlargement of the right chamber of the heart, nor the stasis in the lungs to produce the accentuation of the second pulmonic tone. So in observing acute febrile cases with suspected endocarditis, we should remember that we cannot in mild cases at least in the beginning depend on the physical signs of the heart to give us a clue to the diagnosis. Nor can we depend on the murmurs present to clear the picture unless other symptoms are present, for it was pointed out that these murmurs often are indistinguishable from nonorganic murmurs heard over the heart. Nor can we depend, as we have seen, on the heart's reaction in size or change of character of the tones to assist us. As a result of these factors many of these cases are missed or go undiagnosed for a variable period. Fortunately, however, not all cases present these initial difficulties. Depending on the virulence of the infection and extent of valvular involvement the diagnosis in many cases is established early; the murmurs become typical, the left ventricle enlarges and hypertrophies, even the right ventricle participates in the change, and what is helpful even in the milder cases, some form of pericarditis may ensue.

We realize how important it is to make an early diagnosis and yet how unreliable the physical signs can be, but there is one sign I feel not sufficiently stressed, and which I believe is of considerable help in doubtful cases; that is the character and rapidity of the pulse. We must be careful, of course, in interpreting a child's pulse in febrile conditions for the pulse is easily influenced by temperature, but in the presence of other suspicious symptoms, especially a murmur, a persistently rapid pulse disproportionate to the temperature will frequently lead us to a correct conclusion. McKenzie has pointed this out, and I am inclined to believe with him that when present this is a most important and early diagnostic sign of all forms of acute endocarditis. Besides the rapidity of the pulse, to give this symptom greater diagnostic value, there should be an entire absence of sinus irregularity. I do not mean the absence of sinus irregularity which so regularly occurs in children with febrile conditions, reappearing again with the decline of the temperature and slowing of the pulse, but rather that constant regularity irrespective of the degree of temperature, and no doubt as the result of the constant acceleration of the pulse no sinus irregularity can possibly interpose itself.

With the severe and developed case of acute endocarditis the problem of diagnosis is simple. Although the onset may be insidious and the symptoms for the moment in abeyance, it is not, however, long before the signs show themselves; the temperature assumes the remittent character; the murmur is typical and is transmitted along the line of least resistance; the second pulmonic tone may become accentuated especially in those cases where there have been repeated exacerbations and a certain degree of back pressure is already present, and what is of prime importance, the left ventricle progressively enlarges. The right ventricle even here does not have to enlarge to any great extent. If it does it simply means that we are dealing with a severe infection or possibly repeated recurrences and exacerbations have consumed the reserve force of the left ventricle with the resultant participation of the right chambers of the heart, to stave off if possible a threatening decompensation. This is the usual picture of the typical severe case of acute endocarditis and may continue so, with oscillation, for weeks, unless a pericarditis with effusion supervenes, when the entire syndrome may promptly change.

Strange as it may seem and as desperately ill as some of these patients appear, a careful analysis of the symptoms will show that the severity of the illness is not due to circulatory disturbance *per se*, as one would expect, unless, of course, there ensues an accompanying effusive pericarditis when pressure symptoms may arise, but rather the severity of the illness is due directly to the virulence of the infection. As a matter of fact the lesions of the heart will participate little in the production of symptoms even though the lesions present are severe and extensive. To do so there would have to be circulatory disturbance and the favorable fact that even under stress of infection the heart and particularly the left ventricle is able properly to take care of the circulation makes the bedside problem for the moment one of infection rather than one of circulatory disturbance.

Complications in acute rheumatic endocarditis are not common and the most frequent one as we know is pericarditis. It is often a troublesome complication and can become severe enough not only to overshadow the endocarditis but actually to endanger the patient. If the pericarditis is fibrinous in character or the amount of fluid deposited is small, we can then momentarily disregard its influence except for its confirmatory evidence in an otherwise doubtful or suspicious case, or in other instances, its bearing at some future day on the development of the troublesome form of adherent pericarditis. But if it is severe and progressive and producing symptoms of its own, early cognizance should be taken and interference instituted when indicated. The heart enlarges upward and downward to the left and to the right, to the right more than it does in acute endocarditis without pericardial involvement. The tones are muffled and the pressure in all directions may become so great that true decompensation may set in. It is really surprising how large the pericardium may appear on percussion and yet how often the effusion is mistaken for a dilated heart. If we keep in mind, however, that only under exceptional conditions will the right heart enlarge considerably, its presence will promptly arouse our suspicion. Ordinarily with the usual methods of examination it is not a simple matter to map out an effusion, to follow its progress and particularly to decide when to inter-

fere; but in the hospital we have employed the sign developed by Dr. Haas—the socalled double line—and which has helped us considerably to detect all grades of this condition. With the help of this sign, we follow the progress of the effusion, and it is not necessary to interfere unless the pressure signs become advanced. It is not unusual for the heart to take care of considerable fluid and get well without interference, but in a series of cases where the pericardium is stretched markedly, the lungs completely compressed and dyspnea advancing, the symptoms become urgent enough for relief to be instituted. Much need not be withdrawn, just an ounce or two, and then resorption will begin and the fluid disappear. It must be kept in mind also that the pressure of the lungs can become so marked that the entire lung with the exception of a small area, as pointed out by Dr. Conners, high up in the axilla and another area near the costodiaphragmatic sinus may become completely obliterated. The result is that more or less complete flatness is heard over the posterior chest and, together with the bronchial breathing caused by the lungs being compressed over a large bronchus or over towards the hilus, frequently leads to the mistaken diagnosis of either a lobar pneumonia or pleurisy with effusion.

Another important question, in cases requiring interference, is to decide the point of election for the insertion of the needle. The customary place is immediately to the right or left of the sternum. This site has been attended by too many failures even in cases where it is positively known considerable fluid is present in the pericardium. It has occurred to me that anterior puncture is not a rational procedure at least in those cases with marked pressure symptoms. For if such symptoms can be produced, the lungs are either completely pushed aside or there can only be a layer of compressed lung between the sac and posterior chest wall. Under these conditions the rational procedure would be a posterior puncture at about the angle of the scapula. The entering needle will find itself either directly in the pericardial sac or at the most through a layer of compressed lung which can do no harm at all. We have attempted this route in several cases with most encouraging results. On account of one untoward incident it was discontinued for a time but recently it was resorted to again successfully and I am inclined to think with more experience this route will become the one of chonce. Recently, in a lecture on pericardial effusion, I was much gratified to learn that Dr. Conners uses the posterior route exclusively and successfully. He pointed out by diagram and chart of cadavers, that the heart occupies completely the mediastinal space between the spine and sternum and cannot of necessity enlarge nor hold any fluid between these points and can do so only in the lateral direction by pushing the soft lung before it. This route, anatomically and clinically, is and should be the route of election.

Another rather difficult problem is one where an acute febrile condition interposes itself on chronic endocarditis. As exacerbations are common in acute endocarditis, the temperature may be an expression of a reinfection and it is evident that early recognition for the sake of treatment should be as prompt as possible. The reinfection may insinuate itself similarly as with an initial attack of acute endocarditis, that is, mildly or virulently. As a rule, the virulent attack will be promptly recognized for all the physical signs will rapidly change. There are instances where the reinfection is so overwhelming that it is difficult at first thought to decide between a reinfection or acute decompensation. It would seem that a fine differentiation between the later two would be unnecessary, yet if we are to have a clear insight as to the probable immediate outcome an attempt at differentiation should be made. It should be remembered that an acute decompensation means that the powerful reserve force of the child's heart has been entirely consumed and has no where else to look for assistance; but where it is only a reinfection, even though a virulent infection, the reserve strength of the heart, especially that of the left ventricle, may still be there to serve its purpose. Therefore we can give an immensely better prognosis. Important as it is, it is not an easy matter to separate the two and the entire thing will depend on whether we were fortunate enough to have known the nature of the signs immediately before the onset of the present attack. If the signs change rapidly to the right as well as to the left and some of the secondary symptoms as dyspnea, large liver or edema, are present, we are probably dealing with an acute decompensation, but where the changes confine themselves primarily to the left side of the heart, the secondary circulatory symptoms being insignificant, the temperature remaining high and persistent, together with the possible formation of a pericarditis, we can assume a reinfection. On the other hand in the mild types of reinfection, we may have no new symptoms to rely on except a persistent temperature, the heart apparently remaining the same. The signs do not change unless an additional pericarditis, which is always pathognomonic of infection, sets in. In these cases we have no other recourse but to depend on observation, and the rapidity and character of the pulse.

In estimating the prognosis of a particular case, it should be constantly borne in mind that the life of the patient is directly commensurate with the strength of the heart and particularly the left ventricle. It would seem that the heart in its evolutionary development has been endowed with a strength that can be affected only by a tremendous insult and that this strength is particularly evident in childhood. We observe repeatedly at the bedside that despite stress and infection the circulation is usually equably maintained and only rarely is circulatory failure in the sense of a decompensation present and then as a rule because of repeated infections or because of pressure symptoms from an accompanying pericarditis. Only occasionally do patients die and these not in the strict sense from heart failure but rather from the infection or some action of the infection. These patients are often desperately ill, their hearts being under tremendous stress, but the circulation holds and unless the toxemia becomes too great or some unwelcome complication arise, they will frequently rally and recover from the acute attack at least. The immediate prognosis then is good and only when the signs and symptoms indicate a progressive loss of strength of the heart does the outlook become grave, but fortunately because of its developmental strength, as was pointed out above, this is not common.

CONCLUSION

In conclusion, let me add that whatever the sequelæ, the immediate outcome is usually good and good because, despite the severity of the infection, the heart is usually able to maintain its circulation, on account of the inherent strength of the left ventricle given to it by developmental preference.

1323 MADISON AVENUE.

Infection With Staphylococcus Albus*

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CASE.—L. J., male, aged twenty-seven, single, born in the United States, by occupation a musician, was admitted to the hospital on February 28, 1923. He complained chiefly of pains throughout the body, sweating, cough, chills and fever. He had had measles but no other childhood diseases. At eighteen years of age he had had an attack of bronchitis which lasted a few weeks. Occasionally, within the last few years, the patient had had attacks of pain in the epigastrium followed by vomiting. This usually occurred after an indiscretion in diet. After vomiting he felt relieved and would fall asleep. Otherwise the patient had been in fairly good health. He was not regular with his meals, eating one or two meals a day with little appetite. He did not use tobacco or alcohol.

His present illness started two months before. Pain developed suddenly in the right knee, which spread rapidly and in about two days involved every joint and muscle in the body. At the same time the patient had spells of dizziness and weakness and felt feverish, which became worse daily. His sleep was disturbed on account of the pain. He would doze off and in half an hour would awaken perspiring profusely, after which he felt weak. This had continued for the past six weeks. Cough had been present from the beginning, with slight yellowish sputum. Four days previous to admission the pain became more severe and he felt chilly at times. He was confined to bed for the first time. He had had very little sleep for the past three or four days on account of pain. During the past two months he had lost twenty-eight pounds in weight. Associated symptoms included cough, some pain in the chest, sputum of yellowish character, poor appetite and constipation. The genitourinary system was negative, also the cardiovascular.

Physical examination showed the patient to be a male, very well developed and fairly well nourished, with hemic component fair and muscle tone fair. He appeared to be in pain. The head was moderately large, with no undue prominences or abnormalities present. Pupils reacted to light and accommodation. There was no ptosis. In front of both ears there were areas of discoloration and tenderness. The nose showed nothing unusual. There was a foul odor from the mouth; teeth were in fair condition; tonsils were not enlarged or reddened; pharynx was injected; tongue was coated. There were no palpable lymph glands about the neck, thyroid not enlarged.

The thorax was fairly well formed and well covered, the upper left being more prominent than the corresponding right. Respiratory movements were equal at the corresponding levels; there was no lagging. Tactile fremitus was felt throughout equally and there was a good resonant note throughout. The breath sounds were somewhat rougher over the right apex; they were heard well throughout the rest of the chest. There were no râles. Heart: no apex impulse was seen; on palpation a forceful beat was noted in the fifth costal interspace; there were no shocks and no thrills; no abnormalities were heard on auscultation.

The abdomen was slightly rigid, this being voluntary. There were no masses and no tenderness. The extremities were normal in appearance, no varicosities, no edema. All joints in the body were tender and painful on motion, no evident abnormalities, no palpable glands. The skin was covered by an erythematous rash, more evident on the palms of the hands. All reflexes were normal. Temperature, 103°, pulse 90, respiration 20, blood pressure 130/84.

Blood examination showed red cells 4,500,000; white cells 3,700; differential of polymorphonuclears, 62 per cent.; lymphocytes, large 6, small 32; hemoglobin 75 per cent. The urine contained albumin, granular and hyaline casts, and red blood cells.

A diagnosis was made of influenza, polyarthritis with acute nephritis, and septic erythema. The patient was placed on salicylates and alkalies.

On March 3rd the patient was found to be better. The joint and muscular pains were greatly diminished and the pain in the lumbar region was less pronounced. The temperature was gradually coming down and the impression was confirmed that this was a case of influenza with muscular and joint pains and acute nephritis.

Improvement continued until March 7th. On that day a swelling of the nose became evident, there was also edema of the upper eyelids, also induration and ulceration of the lips. There was also evidence of ulceration in the throat. The whole looked like an acute streptococcus infection with particular involvement of the throat. On March 13th the patient again showed considerable improvement. All joint and muscular pains disappeared, there was apparently a normal temperature, and there was subsidence of the local infection of the nose, throat and lips. The patient showed signs of progressive improvement until March 20th, when there was a sudden recrudescence of almost all the symptoms, with a heightened temperature. Vaccine treatment was ordered at this time. An injec-

*Read before the East New York Medical Society, Oct. 29, 1924.

tion of half a cubic centimetre of 500,000,000 of Van Cott's combined vaccine was given. The condition grew progressively worse. On March 29th the patient became irrational, very restless, there was retraction of the head, with symptoms of cerebrospinal involvement. A lumbar puncture was done, some fluid was withdrawn under slight pressure, but examination of the fluid was negative. On March 30th the condition grew very much worse, stimulations were administered, but the patient died.

In all, two blood cultures were made of the patient, both of them showing the presence of Staphylococcus albus. Diagnosis was accordingly made of staphylococcemia. All in all we had three blood counts made in this case and in every instance it showed a leucopenia. The Wassermann reaction was negative, blood chemistry was negative, Widal reaction was negative.

This case is of interest in so far as it is quite rare and is one of the few reported in the medical literature. Looking over the literature, I went as far back as 1910, but could not secure any data earlier than 1921. Dr. Hans Landu, in the *Deutsche medizinische Wochenschrift* for September 8, 1921, reported two cases of infection with Staphylococcus albus. Walton Martin, of New York, in the *Annals of Surgery,* 1922, reported eight cases of infection of the face and lips due to Staphylococcus albus. Professor Rockenheimer, of Berlin, described one case of infection with Staphylococcus albus. Kleigler and Kraus, in the *Medizinische Wochenschrift* of February, 1923, speaking of infectious diseases, discussed infection with Staphylococcus albus at great length, dwelling upon its fatality. Hine, in the London *Lancet* of December, 1922, also spoke of this form of infection and of its insidiousness.

In all the cases that have been reported, it is significant that the onset is about the same. It begins with chills and fever, pain in all the joints, induration and swelling of the lips and throat, and erythema of the skin, and all of them terminate fatally.

249 New York Avenue.

Dry Diet as a Diagnostic Test as Well as Therapeutic Measure in Acidosis of Children

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Acidosis in children is a manifestation of faulty fat metabolism and hence is most frequently encountered in children from about nine months to three years of age, a period when mothers, in their anxiety to fatten their children, force upon them, in addition to their milk supply, an excessive quantity of fat in the form of cream or butter in cereals and vegetables, rich soups, bacon and the like. When the abominable fad of top milk feeding was in vogue, acidosis was quite common among much younger infants.

As a rule, the attacks occur periodically, the duration of the intervals varying with the degree of tolerance of fat. While the onset of the attack of acidosis is generally sudden with explosive vomiting, rise of temperature, anuria, drowsiness, and often hyperpnea, careful watching generally shows that the actual attack is preceded by habitual anorexia and tendency to nausea and occasional vomiting, particularly in the morning after partaking of milk. It is especially during this prodromic stage that an acute attack is precipitated by the advent of another disease, such as tonsillitis, influenza, or pyelitis, thus explaining the erroneous assumption that acidosis may occur in epidemic form.

The diagnosis of acidosis is readily confirmed at the bedside by the finding of acetone bodies in the urine and by other well known tests where laboratory facilities are at hand. But I wish to call particular attention to a clinical observation that has for years served me as a true diagnostic guide, namely, the acidosis patients, while violently vomiting fluids, almost invariably tolerate solid foods, such as crackers, sweetened biscuits, or palatable cereal pastes without milk. This symptom has proved to me so pathognomonic of acidosis that it has often enabled me to make a positive differential diagnosis between cases of vomiting accompanying acidosis and those of appendicitis, intussusception, polioencephalitis, and similar conditions, in which latter diseases the patients usually vomit everything, fluids as well as solids.

Furthermore, profiting by this experience I have found it no longer necessary to starve the acidosis patients (and thus aggravate their condition), but, on the contrary, direct that small portions of the aforementioned sold foods be given to them. I also find it advantageous to give bicarbonate of soda, mixed with granulated sugar under the tongue, *in dry form,* instead of in solution, when it usually is promptly ejected. In this manner, especially with the aid of a few enemas of sodium bicarbonate (half an ounce to a pint), the acidosis is rapidly controlled. The regular diet, more especially milk or fats, is not resumed until every trace of nausea has subsided and the urine has become entirely free from acetone. Even then only skimmed milk is allowed for several weeks thereafter. Where the acidosis persists, enemas of glucose solutions (one ounce to a pint) three times a day, are of signal benefit, and, when the case is seen late, or is grave in character, the alkalies and the glucose are best given continuously by Murphy drip or intravenously. Blood transfusion often proves a life saving operation in apparently hopeless cases.

127 West Eighty-seventh Street.

Rectal Surgery Abroad

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We are always quite ready to accept a good excuse for exercising the spirit of *Wanderlust*. Whether this is an instinctive trait handed down to us through countless generations of prehistoric nomadic ancestors or is an evidence of the twentieth century spirit of adventure is undeterminable. Be that as it may there is always present a desire to see for ourselves first hand the places, people and things concerned in the circle of our endeavors. In other words we are prone to track tradition, so to speak, to its lair; to search out those places connected by history or tradition to things we are interested in. And as our interests vary so do the paths of our pilgrimage. If this be true it is quite logical for one particularly interested in rectal diseases to make London the Mecca of his pilgrimage. For it was in London that the subject of rectal diseases was first made the object of special study and attention.

Here in 1835 the St. Mark's Hospital was erected and endowed for the study and care of rectal diseases exclusively. Some nine years later this was followed by the establishment of the Gordon Hospital, which follows in form and principle that of its predecessor in that it admits to its wards rectal cases and nothing but rectal cases. Both of these hospitals have adhered to this policy during the years intervening and have been conspicuously successful. These are the only hospitals in London that devote themselves exclusively to rectal diseases but there is at least one other, St. Bartholomew's Hospital, that handles a large percentage of such cases. London, therefore, with its historical significance to proctologists is the chief point of visit to the rectal surgeon abroad. Indeed there are no places on the continent where a proctologist has an opportunity for either observation or study comparable to that afforded in London.

ST. MARK'S HOSPITAL

In London our first visit is to the St. Mark's Hospital. From the fame attached to its name we expect to see a large hospital but such it is not. It is a modestsized hospital of fifty-four beds, some of which are in the wards and some in private rooms. The hospital is efficiently managed and compares most favorably with our American hospitals of the same size. Throughout the last year the hospital cared for 661 patients, which means that out of the fifty-four beds available about forty-seven were occupied throughout the year. The average stay of the patients is approximately twenty-five days. This will strike one forcibly in contrast with our American practice as the average hospital stay of our own rectal cases is considerably under ten days. Some of us make a practice of getting our hemorrhoid, fistula and other rectal cases (exclusive of cancer) out of the hospital in a week. However, we must not judge too hastily on this point. In the first place the average case that comes to St. Mark's Hospital, and I am told that they come from all parts of the empire, is one which has been given up by everybody else. As a result St. Mark's receives a motley assortment of truly bad cases. This undoubtedly partially explains the difference in average stay. It may be further explained on the basis of the difference in national characteristics, that is the leisurely diligence of the Englishmen in contrast to the hurry hurry methods of ourselves. The English surgeon is not usually in a hurry about such things. But one other reason for the longer period of convalescence unquestionably rests in the fact that most patients receive a general anesthetic, or at least some anesthetic in conjunction with sacral block.

These observations hold approximately in respect to the Gordon Hospital, which is a smaller institution, though quite as efficiently run. At the Gordon there are twenty-eight beds available for use and of these an average of seventeen beds are occupied. Last year 325 patients were admitted and cared for and the average stay of these patients was nineteen days.

INCIDENCE OF TYPES OF RECTAL DISEASE

Relative to the incidence of the various rectal diseases, the experience at St. Mark's gives the chief in the following order of frequency: hemorrhoids, fistula, cancer, ischiorectal and anal abscesses, fissure, pruritus and prolapse. During the year of 1925 there were 602 operations performed at St. Mark's Hospital, of which 459 were males and 143 females. Five hundred and seventy-two of these were discharged from the hospital as cured. Experience at the Gordon Hospital runs practically parallel with this.

PERSONNEL

Before proceeding to a description of the various therapeutic procedures employed, it is well to know something of the men using them. Mr. Swinford Edwards occupies about the same position in England as our own Dr. Joseph Mathews does here. To American proctologists Dr. Mathews is reverently referred to as the Father of Proctology—at least as a distinct specialty. Mr. Edwards is similarly regarded as the dean of proctologists in England. With Mr. Aslett Baldwin he shares the honor of being consulting surgeon to the St. Mark's Hospital. Mr. Baldwin is also the chairman of the Subsection on Proctology of the Royal Society of Medicine. Both Mr. Edwards and Mr. Baldwin are elderly gentlemen and both have contributed much to the advancement of proctology in England. It was, I believe, due to their efforts that the Royal Society of Medicine first granted a subsection on proctology. The gentlemen who are preeminently active in rectal surgery are Mr. J. P. Lockhart-Mummery, Sir Charles Gordon-Watson, Mr. W. Ernest Miles and Mr. Graeme Anderson. The

first three hold appointments as surgeons to St. Mark's while Mr. Miles holds appointments to Cancer Hospital and the Gordon. Sir Charles Gordon-Watson holds an appointment at St. Bartholomew's Hospital.

Of these Mr. Lockhart-Mummery is perhaps the

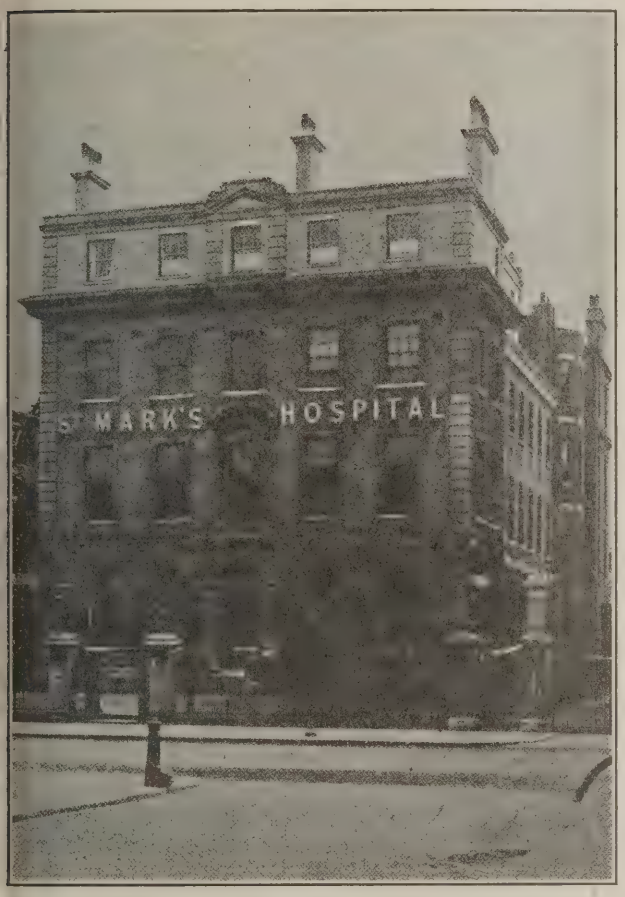

Fig. 1.—St. Mark's Hospital, London.

best known to us in America. This is chiefly through his textbook on *Diseases of the Rectum and Colon.* All four are excellent surgeons and like most Englishmen, polished gentlemen. They have differing views on treatment, particularly on the question of cancer, but their respect for one another is, I must confess, inspiring. Concerning these views more will be said later. Both Sir Charles Gordon-Watson and Mr. Miles are equally active and creditable surgeons. Mr. Anderson, though younger than the others, is a worthy associate, as he is energetic, skilful and exceedingly well informed. Of the younger men, Mr. Cecil Rowntree, Mr. Lionel E. C. Norbury, Mr. W. B. Gabriel and Mr. C. E. Dukes are the best known. Mr. Rowntree is secretary to the Subsection on Proctology of the Royal Society of Medicine and operates at the Cancer Hospital. Mr. Gabriel and Mr. Norbury are assistant surgeons at St. Mark's, while Mr. Dukes is pathologist to the Hospital. The latter has recently completed some very interesting work demonstrating the structure of nerve endings in anal papillæ.

Undoubtedly the big question in most of our minds when we visit a group of such eminent confrères is, "Do they use the same methods as we do?" "What is their experience in the use of these methods?"

In a general way the English use the same methods as we do, with some exceptions to be noted. Considering the fact that the specialty originated in England, this seems only natural. That exceptions are to be found is quite as natural when we reflect on the inevitable modifications each individual makes.

Hemorrhoids, for instance, are dealt with by either surgical or injection methods. The latter method has on the basis of experience been added to the list of approved procedures—wherein perhaps our conservative friends are more progressive than we. Although many American proctologists of repute use this method, it is vigorously denounced by many others and is viewed by the average general surgeon with high disdain. Whether anything more substantial than prejudice or ignorance induces this attitude, is doubtful. Any impartial rectal surgeon who has seen the method used and who has used it himself will come to the conclusions the method is legitimate and has its rightful place among our methods of treating certain types of hemorrhoids. The English, however, seem to prefer carbolic acid (ten per cent. with glycerin and water) to the less dangerous quinine urea hydrochloride. However,

Fig. 2.—Gordon Hospital for Rectal Diseases.

their experience in definite facts and figures seem to substantiate their preference. Mr. Graeme Anderson, among others, is doing much of this work and is having very good results.

Of the operations, the ligature method of Allingham is the one chiefly used, though the clamp and

cautery method is employed in perhaps twenty-five per cent. of the cases. In technic both these are identical with our own methods. Mr. Lockhart-Mummery does not stretch the sphincter in pile operations. It surprises one to learn that the Whitehead operation is still used. Last year nine cases were operated on by this method with resulting cures. In this country the Whitehead is only a relic of the age of the surgical assassin. Surgeons in England still use the "whistle" or "rectal plug." Catgut is used exclusively for the ligatures; neither linen nor silk being employed.

USE OF TERMS

Incidentally it is curious to note the relative frequency in usage of the term piles. Here in America we rather avoid the term as if it were impolite. Be that as it may, it is a more aptly descriptive term than hemorrhoid inasmuch as all hemorrhoids present the symptom of swelling (Latin—pila=swelling or a ball) though not all bleed (Greek—haima=blood+rhoos=flux). The English still cling to the classical spelling of "haemorrhoid" which form is now considered obsolete here.

FISTULA

No one who ever heard Mr. Miles lecture on the subject of fistula could fail to have a clear conception of the nature and variety of fistulæ. The treatment is identical with that in vogue with proctologists here, incision and packing being the procedure in the instance of large fistulæ; excision and suture the procedure in small. The elastic ligature method first devised by Dr. J. Rawson Pennington of Chicago is used occasionally with the modification of using two ligatures instead of one, the object being to prevent any reunion of the severed walls. In conjunction with operations for deep fistulæ, Mr. Miles usually makes four lateral relieving incisions at right angles to the operative incision. The object of this is to increase the surface area of the wound which, according to Mr. Miles, should exceed the combined area of the sides of the wound.

Abscesses about the rectum are believed by Anderson to be due in almost every instance to the perforation and lodgment of a foreign body. He also is of the opinion that in almost all instances if not evacuated promptly they will rupture spontaneously in the posterior wall of the anal canal between the two sphincters.

CANCER

One is very greatly impressed with the work being done on cancer of the rectum and colon and particularly in the conclusions our English friends have arrived at with regard to treatment. They have, like American surgeons, tried all proposed methods of treatment varying from surgery of the conservative type to surgery of a radical type; have tried radium, deep x ray therapy and various other non-operative procedures. Hence, a comparison of their results and their conclusions is most interesting.

Relative to their conclusions as to radium in the treatment of carcinoma of the rectum it may be said that the general sentiment prevailing is not optimistic. Several of the men above mentioned even venture the opinion that the use of radium actually accelerates the growth of the neoplasm. For instance, Mr. Lockhart-Mummery is of the opinion that in rectal carcinomata situated within Others while not holding quite as pessimistic a view, are not at all hopeful on the point of radium therapy. They have come to practically the same conclusions in regard to deep x ray therapy.

SURGERY

In the field of surgery, wide differences of opinion exist as to the most logical procedure to adopt.

Fig. 3.—Holgate Foster Ward in St. Mark's Hospital, London.

the last four or five inches of the anus, perineal excision, combined with a permanent colostomy, is the operation of choice. In this Mr. Anderson concurs. Mr. Swinford Edwards believes that in well defined growths, situated low in the rectum, local extirpation is just as effective. In contrast to this, Mr. Miles is strongly in favor of a combined abdominal perineal excision at one sitting. Sir Charles Gordon-Watson prefers the combined operation in two stages, for high growths; the perineal excision for low growths. All of these men are very greatly impressed with the success of the methods they have chosen and in their hands are, no doubt, satisfactory. The high mortality accompanying the combined one stage operation cannot be denied, while the percentage of recurrences and metastases in the use of perineal excision method is likewise an unfavorable aspect of the situation. They do not use cautery in the excision of rectal carcinomata at all. Regardless of differences of opinion as to the operative method of choice, they all seem agreed upon the point that surgery is, at the present time, the only sure method of treating carcinoma of the rectum. Sir Charles Gordon-Watson does not use either ether or chloroform in his cancer operations but instead uses spinal anesthesia combined with caudal block. Mr. Miles does, however, use general anesthesia. Mr. Lockhart-Mummery uses spinal anesthesia combined with gas oxygen.

VARIOUS METHODS EMPLOYED

To present the arguments advanced by these gentlemen in support of their various methods, the following detail is given.

Mr. Lockhart-Mummery abandoned the use of the abdominoperineal excision in 1913 and at the present time does not use it at all except for high cancers of the rectosigmoidal junction. In the latter instance, he believes it to be the most logical

procedure. The method of perineal excision he believes is much to be preferred in view of the lower operative mortality and the fact that it is applicable to a larger proportion of cases. He has adopted a standardized operation for this type of case consisting of two stages. First a colostomy and the second, which is performed two weeks later, an excision of the rectum and as much of the sigmoid and its mesentery as can be brought down together with the anus and surrounding skin, the contents of the ischiorectal fossæ and parts of the levatores ani. In performing this operation he used spinal anesthesia with the addition of gas oxygen in the case of men and twilight sleep for women. The operation, as outlined, enables the patient to get up in two weeks and to go home in a month. He gives as his operative mortality a little over nine per cent. In regard to recurrence it may be said that in sixty-five cases on whom he performed perineal excision combined with colostomy, thirty were alive and well five years later.

ETIOLOGY OF CANCER INVASION

Mr. Miles is convinced that of the three methods of spread of cancer of the rectum, that is, by direct extension, by way of the blood stream and by way of the lymphatics, that the latter is of the greatest importance. His researches into the anatomical course of the lymphatics lead him to believe that the intramural plexuses of lymphatics do not have very long course along the length of the bowel but are partially separated into the systems, each occupying a short zone in the bowel and each of which give tributaries which drain into the glands lying outside the bowel. In those specimens of cancer of the rectum which he has examined pathologically the anorectal group of lymph glands which comprise ten to twelve glands lying just above the levator ani, are the most important since they were found to be the seat of cancerous metastases even when no other deposits were found. Mr. Miles is much of the opinion that movability of the growth is not a reliable standard by which to judge the amount of spread which had taken place. In support thereof, he showed a specimen where the primary growth had only extended a little over one-half of the circumference of the bowel and yet microscopic examination showed that the cancer cells had already passed through the muscular bowel into the lymphatics. He therefore regards fixation of the growth in the rectum as an indication of a most extensive spread of the cancer and regards it as a great prognostic sign even if complete removal were possible. Since spread has occurred, however, even when a growth is still movable but has extended more than half way round the circumference of the bowel, Mr. Miles contends that the only certain surgical procedure is complete abdominoperineal excision of the rectum and its associated anorectal lymph glands.

Sir Charles Gordon-Watson favors the view held by Mr. Lockhart-Mummery to the extent that while agreeing with Mr. Miles for the theoretical superiority of the abdominoperineal operation, yet he is of the opinion that its practical utility consists in employment for high growths only. He believes that perineal excision of the rectum is the only procedure which is justifiable on clinical and practical grounds.

ECONOMIC CONSIDERATIONS

It would be interesting to note the different economic positions of the specialty in Great Britain as compared to this country. In England, regardless of how great a man's skill is within a specialty, he nevertheless practices general surgery and ofttimes general medicine. Their attitude is that they are all general practitioners and are specially interested in one type of disease. This is, of course, in contrast to our own attitude, where if a man makes any pretense toward a specialty, he is expected to practice this specialty and nothing else. While the latter, or American method, is undoubtedly ideal in many respects, it must be admitted, in justice to our English friends, that their practices in places outside of London are much more limited than ours. Perhaps it would be highly difficult for a man to practice his specialty as strictly as we do here.

THE CHARLATAN PROBLEM

The English appear to have no such problem as the charlatan proctologist. This is perhaps due to the fact that though conservative in manner, they are nevertheless very openminded as to any proposed therapeutic procedure. They do not condemn without trial an innovation, nor do they hastily accept it. They give the new method an impartial consideration, a fair trial and then come to definite conclusions.

In this manner the English remove the fertile field upon which the charlatan thrives, namely, the vague or poorly known therapeutic method. As an instance of this one might take the matter of the injection treatment of hemorrhoids. Because the legitimate proctologists were slow to appraise its value, use and limitations, the charlatan seized upon the method and has since made capital of it; and yet because of its being used extensively by advertising quacks, a large number of legitimate proctologists decry the method. It is quite obvious that the method must be judged on its own merits and not on the basis of the merits of those who use it. It would be just as logical or rather illogical for legitimate proctologists to decry the use of local anesthesia because this same gentry are also using it.

The English have, after an eminently fair consideration of the method, adopted it as one of the methods of treating hemorrhoids. Mr. Anderson, a man of very good standing and eminent abilities, is foremost among those who speak in its favor. Other eminent English proctologists concur in this. In our own country such eminent men as Terrell, Collier F. Martin and Hirschman are thoroughly convinced of its uses in selected cases.

From all that has been said here it may be gathered that by neglecting this method, we have given the advertising quack an advantage that he does not deserve. This has not been done in England, where every proctologist feels entitled to use an injection treatment in cases which he selects as being favorable for its employment.

540 Park Avenue.

Practical Therapeutics

VACCINE THERAPY: A REPORT OF THREE CASES

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Until recently nothing in medicine was in a more nebulous state than vaccine therapy. It is still in its infancy. It has been exploited to such an extent with the public that a patient expects you to use it. Nevertheless one feels that, as in all things in medicine, the return swing of the pendulum is soon to set in. Before that time arrives, however, vaccine therapy will have reached a surer footing and a more scientific basis. There is great promise in the future for it, especially when such men as A. Wright, A. P. Beddard, W. Leishman have taken the subject in hand and study it scientifically.

By the term vaccine we mean any substance which when injected into the animal body will so incite its mechanism as to produce specific antibodies. This makes the term vaccine synonymous with the word antigen.

In this paper, I propose to report three cases in which vaccine therapy was used. In one the patient was apparently cured while in the other two cases the patients were greatly benefited.

Case I.—A. F., male, fifty-five years of age, had been suffering from emphysema, chronic bronchitis, and myocarditis for thirty years. He coughed a great deal, but that he said did not bother him. What he objected to was the fact that he frequently contracted colds during the wet and winter months which made him miserable. He was well developed but poorly nourished. The head was negative. The chest was large and barrel shaped. The lungs were emphysematous with sonorous and sibilant râles present. The heart was enlarged, no murmurs present, embryocardia. The abdomen was negative.

On account of his frequent colds it was decided to treat him with an autogenous vaccine. He was told to come back during one of his colds, and a throat culture was then made. He was then told to cough and bring up some mucus from the bronchi. A separate culture was made of that. At the end of twenty-four hours a growth of streptococcus anhemolyticus and pneumococcus was present. A vaccine was made from these organisms.

He received twelve injections starting with five millions doubling each succeeding dose every five days. Following the fourth injection he had a focal reaction, consequently the next injection was given after a ten day interval. He said that he had fewer colds than any previous winter for the past ten years. The following winter he received no vaccine and he again had frequent colds.

Case II.—L. K., female, forty-eight years of age, had been suffering from emphysema and chronic bronchitis for eight years. She complained mostly of frequent colds which she contracted during the rainy and winter months. She was a well developed, well nourished, white female, with a large barrel-shaped chest and emphysematous lungs with sonorous and sibilant râles present. The rest of the examination was negative. It was decided to use a vaccine. A throat culture and sputum brought up from the bronchi were used. At the end of twenty-four hours, a streptococcus anhemolyticus and pneumococcus were obtained. She also received twelve injections at five day intervals, as in Case I. She was so well satisfied with the result that she came back the past two winters for vaccine treatment.

Case III.—M. F., male, twenty-seven years of age, a barber by trade, began to suffer three years ago from weekly attacks of what was then diagnosed as asthma. He was told by his physician to go into another trade. After a great deal of suffering he obeyed, with the result that the attacks disappeared. Six months ago on account of his finances he was forced to resume his previous trade. Within two weeks he had a recurrence of his old attacks.

Physical examination revealed nothing. He had no asthma at the time and his lungs showed no evidence of bronchitis or emphysema. The history, however, was very definite. The patient was then told to bring samples of hair and dandruff from as many customers as he saw in two weeks. A sample of this mixture was then put in a twenty per cent. solution of alcohol with normal saline as the diluent for the alcohol. This was kept for five days with an occasional thorough shaking. At the end of that time it was filtered. A drop of the filtrate on the patient's forearm and a superficial scratch through it produced within a half hour a typical wheal surrounded by a zone of erythema. This dispelled all doubt as to the diagnosis.

The crude filtrate was now transferred to a sterile test tube two drops of lysol added to it, thoroughly shaken and allowed to stand for a few days. At the end of that time a loopful of the solution planted on a gluocose serum agar slant showed no growth at the end of twenty-four hours. This solution was now dissolved in normal saline in strengths of one half, one quarter, down to one sixty-fourth of its original strength. A drop from each dilution on the patient's forearm and a scratch made through each gave the following results: one half strength, ++++; one quarter strength, +++; one eighth strength, ++; one sixteenth strength, +; one thirty-second strength, faint wheal but definite; one sixty-fourth strength?

The patient was then given a course of twelve injections at five day intervals beginning with a one half c. c. of one sixty-fourth strength, then one c. c. of that; then a one half c. c. of the next strength and then one c. c. of that, and so on. After the fourth injection he complained of a slight headache, running nose, and a heavy feeling in his chest for twelve hours. After the seventh injection he had a definite attack of asthma which compelled him to go to bed for two days, and it was decided to put off the next injection for two weeks. After that he received the rest of the treatment without any untoward effect except an occasional slight heaviness in the chest.

During the treatment he did not work. He was now told to go back to his shop. He has been free from any attacks now for two months.

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THERAPY OF THE NONSPECIFIC PROTEIN REACTION*

Observations Based on the Intramuscular Injection of Venom Protein (Crotalin) Solution in Six Hundred Cases

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(*Concluded from page* 441)

In closing, I want to refer to dysfunctions of the endocrine glands and menstrual irregularities in the female. These conditions are frequently encountered in a series of epileptic patients. The adjuvant effect of venom protein injections by its nonspecific action is stimulating glandular and general plasma activation and by altering the permeability of cell walls often enhances the oral use of dried extracts of the glands of internal secretion; to illustrate:

Case II.—In October, 1918, a girl, twenty-one years old, just starting her senior year at college, consulted me with reference to a convulsive seizure which occurred while at college. History briefly as follows: She was an eight months baby born with instruments; breast and bottle fed; no spasms in infancy. She had had measles and scarlet fever as a child. Menstruation was established at fifteen years which was irregular for two years. First convulsion occurred at her seventeenth year. Periods continued at two to three month intervals and second convulsion occurred at nineteenth year. After this second seizure periods were absent for two years or until September 20, 1918. Two days after this period influenza developed in mild form; a week later she had a third convulsion. A gynecological examination by Dr. George Erety Shoemaker showed no growth or abnormality of formation, but a rather undersized uterus in good condition. He recommended corpus luteum and added to his report that "it sounds like true epilepsy." The patient returned to college and for ten weeks took four lutein tablets daily. No convulsion occurred but there were no menstrual periods. I then began venom protein injections once a week. After the third injection of one two hundredth grain, a menstrual period appeared. The lutein tablets were continued for two weeks out of each month with a venom protein injection once a week, and a period occurred each month during the year 1919. Her periods have continued regular and it is now five years since the last convulsion, and four years since treatment was stopped.

Case III.—Another patient who came under my care on February 7, 1919, was a nine year old boy, who at two and a half years of age started having fainting spells and momentary periods of unconsciousness, diagnosed as petit mal. These continued until his sixth year when convulsive seizures began to occur at one to two week intervals. Under bromides and various glandular combinations the longest interval between major attacks was forty-three days but the petit mal grew more frequent. He had many lapses in a day and at times eight or ten in an hour. Luminal was given for several months but the mother reports that both forms of attacks continued and that mentally the boy became much excited at times. She was advised that a form of insanity was developing and that for her own safety the boy should be placed in an institution.

Venom protein injections were started at weekly intervals. All sedative medication was withdrawn. During the first four months five grand mal attacks occurred but the petit mal continued and rarely a day passed without at least one momentary lapse being noted. After receiving venom protein injections for four months, one grain of thyroid substance (equal to five grains of the fresh gland) by mouth was added every twenty-four hours. By the sixth month the petit mal had stopped. Since starting the thyroid extract he has had but two convulsions, the first on February 14, 1920, and the second on July 16, 1920. He has now gone three years and nine months without any form of seizure and no intercurrent illness has developed. He is fourteen years old, attends school regularly, is developing normally and secondary sex characteristics and has gained fifteen pounds in weight in the last six months. For the past two years one two hundredth grain of venom protein at two week intervals has been given but there has been no thyroid administered for fifteen months.

SUMMARY AND CONCLUSIONS

1. During the past decade the value of nonspecific biological reactions following various protein injections and the benefit of nonspecific resistance to the human organism has become gradually recognized.

2. The mechanism of the nonspecific reaction is generally conceded to include: a. General cell stimulation—"plasma activation." b. Altered permeability of cell and vessel walls. c. Stimulation of the hematopoietic system.

3. The use of venom protein (crotalin) solution is one of the earlier recorded instances of the employment of a nonspecific protein for definite therapeutic purposes.

4. Snake venom is a chemically defined protein which is physiologically standardized by the reptile itself. Its action when tested in animals and the human shows that it: a. Stimulates general cell metabolism. b. Alters the permeability of the blood-vessel walls. c. Produces a selective stimulation of the hematopoietic system and lengthens the clotting time of the blood.

5. Venom protein injections do not produce a general leucocytosis but they do alter the proportional relation of the cells in the differential count with a tendency to an increase of the eosinophile elements.

6. The study of the differential leucocyte count with special reference to the percentage of eosinophiles produced following venom protein injections,

*Read before the Philadelphia County Medical Society, April 9, 1924.

has proven a satisfactory method for regulating the strength of dose and frequency of administration.

7. The practical advantage of using venom protein to produce a nonspecific reaction for therapeutic purposes is shown by the fact that when given intramuscularly, in properly regulated doses, it is harmless, producing no severe local reaction; and that systematically it is followed by no chill, fever, gastric disturbances or vasomotor paralysis.

8. Clinically my experience with the use of venom protein in cases of epilepsy has shown some striking result in the relief or modification of convulsive and mental phenomena. Coincidentally I have observed the favorable effect of venom protein injections on patients' general metabolism, as shown by gain in weight, increase in the percentage of hemoglobin and the number of erythrocytes, and the patients' feeling of well being. The general resisting powers of patients was often found to be increased, as they rarely contracted or developed intercurrent diseases.

9. Of special interest has been the adjuvant action of venom protein injections when used in conjunction with drugs—bromide or luminal in epilepsy; iodides, salicylates, etc., in indicated conditions. Moreover, venom protein used in conjunction with the glands of internal secretion by its plasma and glandular activation, enhances endocrine therapy.

10. Chemically, physiologically and therapeutically venom protein (crotalin) solution seems to meet satisfactorily the requirements of a biological agent to produce nonspecific resistance.

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Antityphoid Vaccination by the Mouth.—C. Achard and S. Bloch (*Bulletin de l'Académie de médecine,* April 29, 1924) note that, in view of the recent reports by Vaillant, Besredka and Gauthier, it appears that epidemics of the typhoid diseases can be checked by vaccination by the mouth. There remains to be ascertained, however, whether all persons who have ingested the vaccine are thoroughly immunized and whether their immunity is likely to be lasting. One of the authors' patients had ingested the prescribed twenty-eight keratin coated pills of vaccine in seven days, yet contracted typhoid fever three and a half months later. They ascribe the absence of immunity in this case to lack of absorption of the vaccine through the mucous membrane, the pills ingested not being such as to insure absorption. To be certain that immunity has been established by the oral use of vaccine in any given case, an actual demonstration of the antibodies in the blood would seem desirable. The authors found that upon doubling the dosage of vaccine and giving bile, magnesium sulphate or calomel in addition, the agglutination reaction failed to appear, but the complement fixation test for typhoid became positive at varying intervals after the ingestion of vaccine. It would seem that where such a positive test is obtained, absorption of the vaccine may be asserted to have taken place. A means of control of the success of antityphoid vaccination by the mouth in any given case is thus afforded. While this procedure, requiring the collection of blood specimens for the complement fixation tests, sacrifices the relative simplicity of vaccination by the mouth as compared to vaccination by hypodermic injection, the procedure may nevertheless seem preferable to patients as well as some physicians on account of its harmlessness and the absence of the reactions following hypodermic vaccination. The procedure is also applicable where for various reasons, such as organic disease in the individual, exposure of the latter to the risk of the reactions sometimes following vaccine injections is deemed inadvisable. The completeness and duration of the immunity afforded by oral vaccination can be determined only after several years of observations, as was the case in the demonstration of the prolonged efficacy of vaccination by hypodermic injection.

Serum Treatment of Puerperal Sepsis.—Harold Bailey (*American Journal of Obstetrics and Gynecology,* June, 1924), having made clinical use of a polyvalent antistreptococcus serum prepared by Huntoon from many sources of streptococcus infection in man, advocates the administration of 100 mils of serum in the presence of a puerperal fever continuing through a second twenty-four hours. This should be done at the time the blood and uterine cultures are taken, and after proper desensitization tests. A number of the patients develop serum sickness, generally after forty-eight hours, but no serious effects need be feared. The intense itching of serum urticaria can be temporarily relieved by small doses of adrenalin. Most patients showed a rise of temperature and pulse rate after serum injection, and many had a marked chill. The serum should preferably be given at a time when the temperature is at its low point for the day. In the taking of intrauterine cultures the cervix is exposed with a speculum, grasped with sponge forceps, wiped with 3.5 per cent. iodine, and a cannula then inserted into the uterus. A much smaller tube with a suction bulb is then inserted through the cannula without touching its edges, and the discharge sucked into it by releasing the pressure on the bulb. The second tube is then removed through the first. With this method the writer never failed to obtain a pure culture. No local treatment was given. The patients were exposed to the outdoor temperature on a balcony, but with protection from direct draughts. Examinations by the vagina or rectum were reduced to a minimum. Where there is a small amount of exudate in the parametrium, walled off by a leucocytic barrier, a bimanual palpation may be sufficient to destroy the protective area. The serum seemed to have a definite tendency to localize the disease by the production of a parametritis.

Historical Medicine

Historical Evolution of the Doctrine of Crises in Disease*

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(*Concluded from page* 444)

However, already in the fifteenth century, a physician perhaps better known by his famous poem *Syphilis,* Fracastor, attempted to react against astrologers and against those whom he called *quasi fascinationibus astrologrum lustrati.* He endeavored to substitute a new doctrine for the then accepted theories, and to explain crises by movements of the humours: bile, phlegm, melancholy. In reality, it was natural to admit that the humours undergo changes in most diseases. The peccant humours must go through the necessary process of coction in order that nature may rid herself of them. Now, since the coction of melancholy required four days, it necessarily follows that the crisis should take place from four to five days.

Fracastor's doctrine recruited few followers; however, those physicians who adopted it, although admitting critical days according to Galen's teachings, gave as causes for crises and critical days, the diversity of humors that most undergo coction, and, in their eclecticism, they also added the different temperaments as well as lunar action.

The great literary movement of the Renaissance resulted in the fact that physicians being more learned in ancient languages, especially Greek, read the original manuscript texts of Hippocrates and Galen, and abandoned the Islamic translations and versions. The Hippocratic-Galenic doctrines were revived in all their purity.

The reaction was not long in making itself felt, and Paracelsus (1493-1541) inaugurated his lectures on medicine at Bäle by publicly casting the works of Galen and Avicenna into the flames. But although Paracelsus accepted the doctrine of crises to a certain extent only, Van Helmont (1577-1644) denied it absolutely: *"Boni ergo et fidelis medici est negligere crises."* He could not accept the comparison made between crises and a struggle: *"Ita nec morbus repugnat naturae duru maturatur, non magis, quam ovum, dum fovetur, cum fovente gallina pugnat."*

It was at this time (1628) that Harvey appeared upon the scene—an epoch when Vesalius, Cesalpinus, Fallopius, and Fabricus ab Acquapendente were building up an exact anatomical knowledge—and laid the first foundations of experimental physiology. But it was not long before the importance of experimentation became overrated and, as in the days of the empiricists of Alexandria, Chirac (3) (1650-1732), with his turbulent polypharmacy, merely recorded—without reasoning—the phenomena that he accidentally provoked. He had the pretension of directing the movements of living bodies, and his disciple Fizes (1690-1765) tells us: *"Naturam errantem dirigimus et collabentem sustinemus, non otiosi crisium spectatores."* (4)

And must not Hoffmann (1660-1742), with his ideas on spasm and atony of the tissues, be compared with the Methodists? It is certainly true that his doctrine is reasoned and wise and although disputing critical days, he accepted crises, applying to them the explanations offered by the Solidists and not believing that the expectant treatment of Hippocrates was the one to follow. And with Hoffmann's theories one must compare the sthenic and asthenic diseases of Brown (1735-1788).

Reil (1759-1813) was another opponent of the Hippocratic doctrines, and from the special point of view of crises a summary of his opinions will be found in a dissertation (1801) upheld by Gruetzbach (5), one of Hebenstreit's students. Peccant matter does not exist; disease corresponds to lesions of the solids. Hence crises are not the expulsions of this matter, and the cause of cessation of fever. Critical evacuations are merely the normal reestablishment of the functions which have been disturbed during the evolution of the pathological state.

Such are the principal physicians who from the Renaissance to the nineteenth century were opposed to the humoural and vitalistic doctrines of Hippocrates, although often, it is true, judged according to Galen's appreciation, when their writings are carefully examined, it at once becomes evident that their systems are closely related to those of the ancient sects, while on the other hand they lead us step by step to those ideas first advanced by Broussais.

But there were others who, throughout the fleeting cenuries, upheld the great doctrine of *vis medicatrix naturæ.* For them disease was an entity, evolving up to the crisis, and all measures of treatment were to be directed to this end, never to upset it.

Among these men I would mention Dulaurens (6), physician to King Henry IV of France, Lazare Riviere (1589-1655) (7), and if one desires prominent medical personalities of the seventeenth century, I would first of all mention Sydenham among the convinced defenders of hippocratic naturalism. Is this not also the foundation of Sthal's (1660-1734) animism, in which expectation, while awaiting the crisis, triumphs? The vital force, whose nature Hippocrates does not specify, is called the soul by Sthal; it is this soul which struggles against the morbific principle and "it is precisely by means of febrile attacks, as well as the legitimate and proportioned effects of the attack, that man is integrally delivered from fevers by the spontaneous power of nature." (8).

Baglivi (1668-1707) opposed the exaggerations of the iatrochemists and likewise repulsed the humoral pathology of the Galenists, and attempted to bring back the science of medicine to observation and the pure Hippocratic doctrine. Although it may not be as easy to verify crises as is usually supposed, Baglivi maintained that this was due to the fact that their manifestations were disturbed by the multitude of

drugs prescribed and he points out that to recognize them one should observe disease in peasants who do not consult physicians. He also enjoins young physicians to study crises and critical days.

Boerhaave (1668-1738) whose influence was very great during a certain epoch, was highly in favor of the doctrines of crises and was the means of causing Van Swieten (1700-1772) to entertain his views. In speaking of Van Helmont, the latter expresses himself as follows: *"Jactabat enim se posse nascentes morbos in ipsis suis incurabulis quasi suffocare antequam adlescerent; et medici nomine indignos esse qui hoc efficere non possent. Verum tot et tanta promittere facillimum est, exsequi autem difficillimum."* (9) This was written at about the same time when the Spanish physician, Solano (1685-1738) questioned whether careful observation of the pulse would not be the means of foreseeing the advent of crises, thus establishing a reasoned prognosis according to the teachings of Hippocrates.

As to the critical days, they were beginning to be less favorably regarded. De Haen (1704-1776) endeavored to collect all the scattered facts concerning the subject related by Hippocrates, while Cullen (1712-1790) admitted the prognostic value of the third, fifth, seventh, ninth, eleventh, fourteenth, seventeenth, and twentieth days. In 1751, the Academy of Dijon offered a prize for the best essay deciding whether critical days were the same in the climates of France as in those where Hippocrates observed them, and Aymen, whose work I have already referred to, solved the problem in the affirmative, and maintained their practical value.

In 1753, Bordeu (10) published an important historical work on crises and critical days. In reality, this remarkable clinician, like Solano, set out to study those changes of the pulse susceptible of foretelling the advent of crises, and he first of all established the fact that observations confirmed the existence of critical phenomena, but destroyed the doctrines of critical days.

Now it was at this epoch that the physiological and experimental methods were beginning to bear fruit. The marvelous had progressively been reduced to nothing; the part played by hypothesis was slowly but surely on the decline, and thus we come to the end of the eighteenth and the commencement of the nineteenth centuries; yet the same dissensions continued. Nobody now seriously considered the doctrine of the indicatory and critical days, and it merely is a matter of historical curiosity to mention a *mémoire* published by Bricheteau as late as 1848, in which he still clings to their importance. From this time on nobody will be found to deny the critical phenomena in acute disease, but interpretations will differ.

In the first place, Pinel, a staunch believer in the essentiality of fevers, whose thesis appeared in 1796, upholding this doctrine, was followed five years later (1801) by Broussais, the most advanced champion of the opposite doctrines and who passed the remainder of his life in attempting to demonstrate that invariably irritation and phlegmasy are in play. Consequently for him, crises are irritations, sympathetically produced at some sitant part, hence acting favorably like a blister, a bloodletting, or a purge. For a time Broussais's doctrines were practically accepted everywhere, but about 1835 they began to pale. Already in 1826 Bousquet maintained that crises were not revulsives, because in those diseases where they took place were not always inflammatory processes, and he also pointed out that the physician should be able to produce a crisis at will were this the case, when in reality he is powerless to do so. To bring about crises nature possesses procedures unknown to man; she has fixed times for action and organs which she prefers, and produces them according to laws that still remain to be discovered.

However, the works on general pathology of this epoch reveal the antihippocratic and antihumoral tendencies of the most authoritative representatives of the Paris School. Chomel said that the doctrine of crises could not be denied; a crisis merely is a remarkable change for better or worse arising during a disease, but he refuses to consider the relationship existing between this change and critical phenomena. Are the latter the cause or effect? To this question Chomel replies that according to circumstances they are either one or the other. Many other distinguished names could be mentioned; but time does not permit. Let it be said, however, that they perpetuated the discord and that this hesitancy in respect to the hippocratic doctrine was likewise rampant in the Faculty of Medicine of Strasbourg.

At the venerable Faculty of Montpellier, the Hippocratic doctrines have always been accepted in all their primal simplicity. Disease has always been considered as an entity, a corrupt principle against which the forces of the human organism struggled in common effort. And today, with all we have gleaned from the progress of biological chemistry and bacteriology, are we not logically compelled to accept a conception of disease similar to that conceived by Hippocrates?

The doctrine of critical days is forever gone, but the doctrine of crises in acute morbid processes is as true today as when Hippocrates developed it, namely four hundred years B. C.

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The Taoist Pharmacopœia.—This is restricted to mineral preparations. They have not descended to devising concoctions, as in other primitive schools of medicine, so disgusting to the offending demons that they would flee in terror. The priests sometimes try to distill mercury. When the preparation has been successfully distilled nine times, the resulting substance is called the elixir of life. The panacea for all ills is to make the mind an absolute blank, and to remain motionless in accordance with the master's teachings.

Obstetrical Images

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Close relations between obstetrics and religion have been illustrated (5) so recently that no mention need be made here. Such relations were represented in an extant picture (4) of about thirty thousand years ago, and an almost continuous chain of similar representations remain so far as they have not been wilfully destroyed in recent centuries. The latest find (8) is of over six thousand years ago, in Crete. A female clay idol of squatting type, evidently of the Neolithic era, exemplifies the type on the neighboring mainland of Asia. What had there hitherto been found cannot be looked up by me, even in my notes, as I am blind and without clerical aid; I can merely adduce a few parallels elsewhere, as these chance to stick in memory, viz.:

The squatting position, the abandonment of which and of its equivalents, may be largely responsible for childbirth among us having become a pathological process rather than a physiological one, is amply illustrated in a book (6) which rapidly passed through several editions.

The French, amplified, translation (7) has on page 336 a picture of a West African pantheon of forty years ago, showing, among other images, one of a squatting, parturient goddess, the head of the infant being all yet in evidence.

Conventionalized, squatting, images (1, 2) used by West Indians at time of discovery by the Spaniards, still survive in considerable numbers because the images were small; comparison of these with similar ones on the continent of America were prevented by the discoverer's lamentable death.

The purpose of this article is two fold, viz.: to invite any qualified person interested in the arts (3), obstetrics and religion to make use of my notes, which will be freely and gladly given; to call more general attention to the Cretan article (8), wherein the discoverer of that important but forgotten civilization, has reported his last summer's explorations.

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Contributors to the Science of Medicine

Rudolf Virchow

When Rudolf Virchow died on September 5, 1902, in Berlin in his eighty-first year, science as a whole had one of the greatest losses it has ever sustained, so many sided were the attainments and learning of this great man, whose work was notable in medicine, biology, anthropology, literature, scholarship, and statesmanship. The medical press in particular lamented Virchow's death, and the journals of 1902 are full of eulogies, biographical sketches, and accounts of his work. The *Philadelphia Medical Journal,* for instance, followed in its columns the happenings of the last several months of the great scientist's life from the time when his health began to fail and he was taken to Carlsbad for the cure, to his death and municipal funeral, when the whole city of Berlin went into mourning for his death. The funeral services were held in the city hall, where the body lay in state in the assembly rooms of the magistracy. These chambers and the adjoining lobbies were literally choked with a profusion of flowers from the scientific societies of all nations and from personal friends and colleagues. American physicians in Berlin sent a magnificent wreath expressing the respect and admiration of America for Virchow's work in pathology. The rooms were crowded with the great men of all nations, including many royal personages. The funeral cortege was so long that it took more than an hour for it to pass. Virchow was buried in St. Matthew's Cemetery.

His birthplace was Schievelbein in Pomerania, and the date of his birth was October 13, 1821. His family was of humble origin. After attending the gymnasium and the Friedrich Wilhelm Institute, he went to the University of Berlin, whence he was graduated in 1843. His thesis was entitled *De Rheumatic Praesertim Corneae.* When only twenty-four years of age he was appointed assistant prosector to Froriep of the Charité, succeeding him as prosector the following year. In this position he directed the whole anatomical routine of that great institution. In 1847 he was made a regular lecturer in the University of Berlin, and founded with Reinhardt the *Archiv für*

pathologische Anatomie und Physiologie und für klinische Medizin, which later was given his name. In 1848 the government sent him to Silesia to study an epidemic of typhus among handloom weavers. His report was so complete and scholarly, and showed such penetrating insight both from a scientific and from a political point of view, that it probably helped lead to his being offered membership in the Prussian Lower House. Since he was only twenty-seven he would not accept the post. At this time he was editor of a medicopolitical paper called *Medizinische Reform.* In 1849 he was discharged from his prosectorship because of political affiliations unpleasing to the government, but so many other positions, both educational and literary, were opened to him that his dismissal hardly affected his career. During his lifetime he was editor of several of the leading medical and scientific publications of Germany, and occupied chairs in a number of the universities.

In 1859 the government of Norway summoned him to make a study of leprosy in that country. In the same year he was made a member of the Berlin Municipal Council, a post which he filled for more than forty years. In 1802 he became a member of the Prussian Lower House, where he was one of the founders of the progressive radical party, and as its leader so antagonized the imperial government that Bismarck challenged him to a duel. For several years he was a member of the German Reichstag, always on the side of the people, and in 1866 became a director of the *Berliner Hilfsverein für die Armee im Felde.* Through his own personal efforts, the first Prussian ambulance corps was organized, and the hospital of the Tempelhof Field, Berlin, erected. He was influential in the erection of many other German hospitals and scientific institutions, in bringing about the adoption of the Berlin sewerage plan through a system of canals, and new regulations concerning animal diseases, slaughter houses, and fisheries. Virchow's great renown throughout the civilized world was shown by the international celebration of his eightieth birthday in 1901. Many of the largest cities of many countries had ceremonies in his honor, and in Berlin a great meeting was held, at which the German physicians presented him with a large sum to add to the endowment of the Virchow Institute; the Emperor gave him a gold medal testifying to his scientific achievements; another gold medal came from the King of Italy; and many universities and medical and scientific societies made him an honorary member and conferred degrees upon him. Special Virchow numbers of medical journals were published, and the new Berlin municipal hospital was named the Virchow Krankenhaus.

Virchow's fame in medicine rests chiefly upon his work in pathology. His great work was on cellular pathology. This became known to Americans through the translation of Frank Chane. He discovered the selfpropagating power of the animal cell. His work is based on the theory that "man is a cell state, in which every cell represents citizenship, the tissues, muscles and bones representing different layers of society. Disease is merely a conflict in this state between citizens, caused by changes wrought by outside action." He was the first to use the term mycosis. His work fills more than 125 large volumes and a thousand pamphlets. Virchow did not establish a school; he was too broadminded and farseeing for that. He has been compared to John Hunter in that both, in pathological anatomy, represented the pure Baconian type of scientist.

As one of the leaders of the Prussian Radical Party he of course often incurred the displeasure and opposition of the Imperial government, yet he continued to hold for the greater part of his life important political positions, and was able to bring about many legislative reforms, especially in the field of public health. Among these were the German vaccination laws and those for food inspection and suppression of epidemic diseases.

As an anthropologist Virchow was especially interested in the races of the Pacific islands, and was the author of several monographs on race similarities and differentiation. As an archeologist, he studied on the ground the remains of the civilizations of Greece, Asia Minor, and Egypt, traveling with the famous Schliemann and often taking part himself in the excavations.

Dr. Joseph McFarland, writing in the *Philadelphia Medical Journal* for September 13, 1922, gives some interesting personal reminiscences of Virchow, with whom he was associated in work for a few months. Dr. McFarland says that Virchow "acted less like a great man than almost any person I have ever known. He had little place in his own thoughts." He was small, but with broad shoulders, and his face was Semitic rather than Teutonic in type. His conversation was rather rambling, and his delivery as a lecturer monotonous and tiresome. "He paid the most minute attention to what one might regard as unimportant details, and no doubt much of his success in life depended upon this care. A friend with whom I once walked through the Institute remarked that a great man should not sit calmly before a table covered with jars and waste time pasting labels upon them. It was, however, in all probability one of those details the importance of which he grasped, and which helped to make the museum of the Institute great. . . . Correct and careful himself, he required those with whom he came in contact to be so. I have seen him stop in the midst of a lecture to caution a student not to tilt a jar lest he injure the specimen it contained. His lectures were excellent in substance, but tiresome from the monotony of his delivery. There was no eloquence, no dramatic effect. Inattention, however, was intolerable to him. 'Herr, sind sie krank?' he one day asked a student who sat before him with his head resting on his hands, his eyes closed, and his thoughts wandering far from the subject at hand. His perceptions were very keen. Things seemed plain to him. He classified facts readily and saw the subtle connections between related phenomena. 'Professor,' said a student, 'I wish to do some experiments on inflammation.' 'Inflammation!' said the old man, his eyes kindling. 'Inflammation is only a conception, an aggregation of phenomena; you cannot experiment on inflammation.'

"His keen appreciation of the value of results derived from careful experimentation, and his own industry, perseverance and patience gave him a horror of unfinished work. I was forced to leave Berlin in the midst of a research begun in his laboratory,

and under his direction. As I made my farewell visit, the old man grasped me by the hand, but, though his greeting was friendly, he gave me the impression that I should not regret my departure because of severed acquaintances so much as because my *Arbeit* was not finished. Since then I have always had a disagreeable feeling when I had unfinished work on hand. Brief through my acquaintance was, I remember Virchow as a broadminded, wholesouled man, generous toward all, possessed of a remarkable keenness of intelligence, careful attention to minutiæ, unlimited patience, determined perseverance, and a vast capacity for work."

Herodotus as a Medical Writer.—Warren R. Dawson, F.R.S., in a letter to the editor of the *Annals of Medical History* (September, 1924) writes that in an exhaustive study of the ancient Egyptian medical papyri, it was necessary to read the works of ancient medical writers of other countries, and that among these Herodotus yielded a large and interesting crop of statements on medical subjects. Illness and disease are nearly always attributed to divine displeasure afflicting the transgressors through evil spirits, but Herodotus contradicts this statement made by nearly all the papyri and writes that the Egyptians believed that all the diseases to which they were subject were caused by the food they ate. He informs us that they "purge themselves every month, three days successively, seeking to preserve health by emetics and clysters." Herodotus states that all their physicians were specialists, but from the medical papyri it would seem that they were general practitioners. The Babylonians are said to have had no doctors but to have brought their sick into the market place so that passersby who had been similarly afflicted might advise as to treatment. The Persians appear to have had some medical skill. An enemy who had fought bravely and been seriously wounded was rescued because of his great valor by the Persians and had his wounds treated with myrrh and bound with flaxen cloths. Him they treated with the greatest honor, but the other prisoners had the rank of slaves. The Persians isolated all persons with leprosy and scrofula. They drove away white doves, believing them to be similarly afflicted.

Herodotus believed that the dwellers in the Nile valley became black through exposure to extreme heat. Several cases of mental disorders are mentioned. Cambyses suffered from infancy from the "sacred disease" (epilepsy); "in that case it was not at all surprising that when his body was so diseased, his mind should not be sound." Another prominent personage was out of his mind and had to be confined in a dungeon. The crew of a trireme was seized with madness—the venegance of a god because his statues were violated. Cleomenes's "madness" is attributed to his habit of drinking unmixed wine. Two cases of blindness are mentioned, one the result of a vision, and the other of divine punishment for an insult to the river Nile. Croesus had a son who was dumb, and, after all remedies had been tried in vain, the Delphic oracle was approached. The reply was to the effect that it would be an evil day upon which his son should first speak. He did so when a Persian was advancing to kill his father, and so saved the latter's life. The Carians in attempting to dig through an isthmus in order to convert it into an island were receiving severe injuries to their eyes from the stone cutting. They consulted the oracle, which replied that if Zeus had wished the land to be an island, he would have made it so. The Carians forthwith abandoned their undertaking and were captured!

Of anatomy practically nothing is found in Herodotus except what is contained in his well known description of the Egyptian method of embalming. Mention is made of opening the body of a boy killed with an arrow by Cambyses in order to ascertain what portion of the body the weapon had penetrated. It was found in the heart. Mention is also made of the finding of a skull without sutures, and of a jaw in which the teeth had all coalesced into a single bone.

We are told of a father who refused to believe his own paternity because his son was born before ten months had expired. His wife, however, knew that women often bear children after seven or nine months, and declared that her son was a seven months' child.

An interesting case is described of a prisoner who to escape torture cut off most of his foot in order to free it from a chain, dug a hole through the wall, eluded the sentinels, and made his escape through traveling at night and hiding in the daytime.

The Librarian of the First French Public Library a Physician.—Dr. J. W. Courtney, in an interesting article on Gabriel Naudé, M.D. (*Annals of Medical History,* September, 1924) tells us that according to biographical records no woman ever aroused in Naudé a tender emotion. "In his modest dwelling at Chantilly he managed to tolerate the presence of a female cook because, as he tells us, he sometimes desisted long enough from his studies to go to the *manger*. However, in spite of this outstanding misogynistic trait, he constantly refers to the Mazarin library as his daughter. Snugly sheltered within the walls of Rome, he had written his infamous *Coups d'état* which comprises a vindication of the St. Bartholomew massacre, a document so perfectly inhuman and revolting that the reader recoils from it in horror, wondering what manner of monster mind spawned a thing so unspeakable. And wonder waxes when one finds that it was the same mind which conceived the subtly delicate idea of contriving a retired entrance, royal in its exclusiveness, through which supersensitive, out at elbows seekers after knowledge, garret rats from the 'left bank' or lodgers under the Pont Neuf, might make their way direct to the Mazarin volumes without encountering the disdainful glances and humiliating innuendos of the Cardinal's ornate flunkies and other equally offensive servitors. For several years prior to 1648 the entrance in question was put to use by favored scholars. Naudé tells with pardonable pride that he often saw upwards of a hundred of them at a time, all immersed in pages of his precious volumes." Thus it was Gabriel Naudé, M.D., famous physician of his time and honored librarian of the "titled crook," Cardinal Mazarin, who opened the doors of the first public library in France in the year 1652.

Editorial Articles

WHITHER ARE WE TENDING?

To the careful observer of world affairs, it is all too apparent that all mankind is in revolution—revolution which is an evolutionary expansion away from the established order of things—and it is a wise man indeed who can foretell the goal which will be reached. This is what has happened whenever man has begun an Hegira. It is doubtful if those who lived at the time of the Reformation realized even dimly the extent to which a desire for religious freedom would lead the world and those who heard that first shot at Concord could not foresee the distances in time and space to which its reverberations would reach. Another shot, that of Sarajevo, set the whole world on fire, altered the map of Europe, changed the economic basis of the nations and set loose upon the earth a desire for freedom which on the one hand would abrogate moral restraint and on the other enacted the Eighteenth Amendment and created Fascicism.

The Bolsheviks and Soviets cry for greater liberty, Mussolini pronounces dead the virgin goddess of Liberty, the conservative demands a return to Victorian prudery, reformers urge greater public expenditure for uplift work, reactionaries long for the days of individualism when every man fended for himself. The industrial face of the world has been changed just as the amateur mapmakers of Versailles changed the geography of Europe and left a dozen danger places, any one of which would even now be kindling the fires of war were it not for the restraint of economic pressure.

We of the medical profession are part and parcel of this revolution; we are so entangled in it that we have lost our sense of orientation; we are changing rapidly, but do we stop to consider where this change is leading us? Do we endeavor to shape our course in a desirable direction?

Aside from the changes which are concomitant upon the general change which society is undergoing, there are certain seeds of mutation within ourselves. The increase in hospital practice, the extension of the dispensary movement, the introduction of the scientific refinements of treatment, group practice, the increased efforts in the direction of public health, industrial hygiene and the health education of the general public are altering the entire outlook of medicine. The sanitary profession has reduced the communicable diseases to a point where considerable inroads have been made on the income of the general practitioner, specialism has divided and subdivided the fields of practice until the sections sometimes seem to have been made by a microtome; the cost of illness has risen to a point where only the very rich and the poor can hope for adequate treatment. The doctor himself has in a measure forsaken the art of medicine for the science of medicine, perhaps for the business of medicine; frequently, the sick man ceases to be a patient and becomes a case, a vehicle for an interesting disease. The public, especially the great middle class which is neither rich nor poor but is none the less the meat in the community sandwich, is growing restive under the high cost of medical and surgical treatment and is seeking relief in the realm of quackery, isms and pathies. Between the specialist on the one hand and the irregular on the other, the general practitioner is subjected to an economic pressure which is killing off this splendid body of medical men. The great god Gouge is slaying his worshipers; the public is getting doctor shy.

What is the answer? Is it state medicine? Is it a limitation of specialists? Is it group practice? Is it the medical education only of those who are not dependent on their fees for a livelihood? Is it the abolition of commercialism from medical practice? Is it the adoption of more stringent guild methods? These are questions which the leaders of medical thought should answer. As it is, we are being carried somewhere, into some uncharted sea without pilot and the helm adrift.

THE GREAT PLAGUE OF LONDON

If testimony is required with regard to the efficacy of sanitary measures carried out properly and on a big scale, no more convincing evidence can be found than a history of the various epidemics of plague which attacked London some hundreds of years ago. Our knowledge hitherto of this subject has been gathered mainly from Defoe's *Journal of the Plague Year*. Of course, Defoe was one of the most vivid descriptive writers that ever lived, a genius indeed in this respect. However, more than most men of genius Defoe possessed an almost untrammeled imagination.

Robinson Crusoe is the outstanding example of this conspicuous faculty of making the inventions of his imagination read like facts. But this gift may be detected in all his works whether they were published as fiction or fact. Therefore Defoe's account of the plague while a book to be read as a wonderful tale, may be regarded with some doubt as a faithful

record of true happenings. Also his book was written nearly fifty years after the Great Plague.

Defoe's immortal work will always be read for its literary qualities and for its striking descriptive powers, but a book published recently by the Bodley Head Press, London, and written by Mr. Walter George Bell, on the great plague of London, is more to be relied upon as an authoritative account. Views as to the plague in London are inaccurate. Plague had been endemic in London for many generations, and the Great Plague was only the worst of a series of epidemics of the disease which broke out at intervals. In 1550 or thereabouts, fifteen thousand persons perished of the plague in London. Ten years after that time one thousand persons were dying weekly of plague in London and so fearful was Queen Elizabeth of contagion being carried to Windsor that she caused gallows to be set up there to hang all Londoners who ventured thus far in that direction. In 1603 the year in which Elizabeth died 33,347 plague deaths were recorded in London, which it should be remembered was a city considerably smaller than in the time of Charles.

In the year of the accession of Charles I there occurred the most deadly epidemic since the Black Death. In a year's time 41,313 people died in London. At the end of the year 1664 when several cases appeared in London its population was, roughly speaking, about half a million. In the spring of 1665 the cases became more frequent and in the middle of May the authorities and the populace became seriously alarmed and the epidemic spread rapidly. In the week ending July 4th there were 1,006 cases and throughout September an average was reported of eight thousand cases. In all London not fewer than one hundred thousand persons died of plague in 1665. The mortality was almost entirely among the poor, as the vast majority of the professional and mercantile classes, in fact all who had sufficient money to get away did so. Whole families and communities perished. The Lord Mayor stuck to his post, as did Pepys, who remained as a spectator.

A few brave doctors and clergymen kept within the walls and succored the sick and dying as far as they were able. Not that the doctors could aid in staying the spread of infection as their specifics ranged from burnt amber to dried toads. The disease was frightfully deadly, a man was healthy apparently in the morning and dead at night. The red cross was put on the door of a house in which plague appeared, the door was sealed, and the sick were practically deserted. No business was done, food was scarce and all the time a burning sun blazed in a hard blue sky as if nature were mocking at the suffering and impotence of mortals.

A great deal of discussion has been held and even controversy has raged as to the nature of the plague of London. It now seems, according to Mr. Bell's book, that it was a form of the plague which flourished in the dirty and insect infested cities of Asia, and spread, as the plagues of Asia are supposed to have been, by rats. The old black rats abounded in London, living in every wooden house in the crowded filthy refuse laden streets. The dogs in London were killed, suspected of carrying infection, while the rats were allowed to go unscathed.

It may be said that the sanitary conditions of London at the time were unspeakably foul, houses were rotten and sewers open. One thing was known, it was indeed to obvious to escape notice, that the plague was virulently infectious. Drought assisted the plague; frost killed it, as it depended for its continuance on climate, rats and dirt.

The abolition of plague from England was a striking example of the effects of sanitation properly carried out. In the days of the plague London was one of the dirtiest cities of the world, and the centre of plague in England. By the strict application of wise sanitary measures it has become perhaps the healthiest. The history of the plague of London emphasizes the triumph of public sanitation, a record of which every medical man should be proud.

VITAMINES

For some years now it has been preached so persistently by certain medical authorities that the presence of vitamines in sufficient amounts meant good health and their lack or absence meant ill health or disease, that with some the subject of vitamines seemed to have become almost an obsession. Recently, a stand has been made against attributing to the vitamines such magical powers, and while allowing that their rôle is important, it has been suggested that other constituents of a diet are of equal, if not greater importance. At the meeting of the British Medical Association held last summer, John Boyd Orr read a paper before the Section on Public Medicine and Industrial Diseases, in which he endeavored to estimate the vitamines at their true value. He emphasized that those foodstuffs which were rich in inorganic constituents, liable to be deficient in the modern diet, were also rich in vitamines. He went on to say that in some of the work on these elements much of the beneficial effect ascribed to hypothetical vitamines was in reality due to the minerals present in the substances given as a source of vitamines.

In practice, therefore, the adjustment of the mineral balance was of more importance than the inclusion in the diet of substances supposed to be rich in vitamines. In short, in an ideal diet, the metabolic

balance is the goal to be strived for, and in this balance, if ill health, and goitre especially, is to be avoided, iodine in sufficient quantity must be present.

Therefore, in order to prevent goitre and other conditions owing to a scarcity of iodine, the diet should be regulated to include such food substances as contain iodine. According to Boyd the only certain sources of iodine are green vegetables and cod-liver oil, while Dr. Donald K. Tessler, of the United States Bureau of Fisheries, has been reported recently to have found that oysters, clams and lobsters are rich in iodine, containing approximately two hundred times more than beefsteak or milk. Undoubtedly then, iodine possesses quite remarkable food properties, as well as those of a therapeutic nature, and is as essential to good health as the vitamines.

By ingesting an adequate amount of food stuffs containing iodine the bodily requirements, and those of the thyroid gland in particular, so far as iodine is concerned, may be satisfied. But there are occasions when the aid of iodine as a therapeutic agent must be called in and of course, on such occasions, the physician is the best judge as to the form in which it should be given. This editorial is intended to be in the nature of a counterblast to the vitamines, or rather, to point out and bring evidence to show that there are other constituents of a diet of equal importance, not the least of which is iodine.

THE HEALTH OF WORKERS

The industrial phase of public health work is daily becoming recognized more and more as one of the most important aspects of the problem of community hygiene. In a recent issue of the *Nation's Health* are, among others, two articles of special interest on this phase of public health. The first is an account of the founding, organization and activities of the Workers' Health Bureau, by Grace M. Burnham, director of the bureau; and the second is entitled Mercantile Health Work and is written by Dr. Arthur B. Emmons, 2nd, director of the Harvard Mercantile Health Work of Boston.

The Workers' Health Bureau functions as an international office for all affiliated trade unions and is supported by them on the basis of a yearly *per capita* affiliation fee of twenty-five cents. The Workers' Health Bureau was organized a little over two years ago with three functions: 1, Analysis and research to secure exact information regarding occupational hazards; 2, the establishment and supervision of trade union health departments to provide careful periodical physical examinations for members, and special care for those suffering from occupational disease; 3, health instruction for the translation of technical data into language that workers understand, in order to teach them how to safeguard themselves against occupational and other diseases.

The painters' union was the first to adopt the program of the bureau, and may be taken as illustrative of its work. The journeymen painters and allied crafts health department was organized in New York city. This department has its own laboratory and x ray machine and is open several evenings a week and all day Saturday. The staff consists of a medical director, dentist, nurse, laboratory technician and x ray operator who is also a physician. The Workers' Health Bureau planned and organized the activities of this department and superintended the choosing of staff and equipment. Each member of the union receives a detailed physical examination, and help and advice are given to members suffering from occupational disease and in compensation cases. By uniting their buying power, members have been able to reduce greatly the cost of such an examination. "This is the application of the cooperative principle to the field of medicine, the first attempt of its kind in America," the article states. "All members of trade union health departments pay the assessment, no extra fees being charged where members require special service." Six months after the establishment of the painters' health department the workers' bureau issued a comprehensive report on conditions among painters in New York and on paint materials being used. It is publishing a bimonthly bulletin called *Health Facts for Trade Unions,* has analyzed the health hazards in forty-four trades and is organizing health programs for these. A health textbook is in course of preparation.

The Harvard Mercantile Health Work was organized nearly four years ago by a group of merchants who believed that it was good business to prevent absence and loss of time from illness or injury. They furnished the budget and the Harvard Medical School agreed to supervise the study. The first procedure was to study twenty-five subscribing stores from a sanitary and health point of view. A detailed report of each establishment was made, with recommendations for improving conditions. Among the unsanitary conditions found were improper seating; the wearing of shoes that prevented proper standing position, or were bad for the feet; bad lighting; faulty ventilation, and too high or to low temperature. Other objects studied were illness, injury and personal fitness, and the waste from these causes. It was estimated that each new person placed and trained costs from $50 to $100, and this is a total loss charged to operating expenses. It was very evident that the doctor, the dentist, the nurse, and

the physical director were all able to do their part in dealing with these people and directing them into healthier ways of living. Mental hygiene was found to be perhaps of greater importance in industrial medicine than physical hygiene. The writer states that his experience has shown that the soundest policy for financing such health work is through the organization of mutual benefit associations, each member paying small dues, and the business contributing an amount equal to the total of the dues. This method should finance a health department and also pay compensation for prolonged illness. Small concerns can band together and supply funds and pay a staff in this way.

A study of the common causes of absenteeism showed that the most expensive disease group is that of the upper respiratory infections, which showed a percentage of 39.47. Injuries to bones, joint, tendons, etc., came next, with a percentage of 8.17, a difference of great significance. The lowest cause was from eye trouble, with a percentage of 1.7.

"Public health is successful only where a strong motive is active," writes Dr. Emmons. "Fear of communicable disease is the strength behind the public health official. In mercantile medicine, the continuance of the job is the chief motive for following health advice. The mercantile health officers must be a plausible health teacher."

THE DISEASE OF THE LEARNED

Laboriously, proud science discovers facts that have long been part of the lore of common mortals, and in searching with the statistical probe into the causes of sickness among students the health director of a leading university has just found that considerable of the disability is due to the pursuit of studies for which they are not fitted. Most of us have known this since the day when we first took up the man child's burden of book and pencil and trudged unwillingly to school. From the kindergarten up there was very much that was bad for our health. Personally, English grammar (as it was taught) and Latin (in every way in which it can be presented) produced pathological effects so profound that we wonder we ever survived. Nor was there escape on the day of rest, for Sunday sickness has long been known as a disease affecting especially boys exposed to schooling in religion.

It was neither a new discovery nor a first proclamation of such a truth by men of learning, for Thomas Cogan, benevolent old Elizabethan physician, pedagogue and writer on popular hygiene (also, what is less common, popular writer on hygiene), held that "students be commonly valetudinary, that is sickly," and hence should eschew the eating of cheese, while Voltaire had much to say about the "disease of the learned."

Now that the twentieth century savant has confirmed, with statistical finality, the belief of the wise of other generations and the sad experience (rarely consulted) of children for ages past, perhaps something may at last be done about the matter, for the logical conclusion to be reached is that all school work that is disagreeable should be abolished as depressing to health and vitality. Of course we have made some seven league strides in this direction in the doling out of electives to college students, but we need more of them and the curriculum of the common school should be made so sanitary that even the first grader can take his choice of subjects. If we are to become a really healthy race this day should not be postponed.

Carrying this inference one step further, all disagreeable labor and everything done under compulsion must be bad for the health and should be done away with.

There seems to be little acquired, and less hereditary immunity to unsuitable study, and since exposure has become (no, has been made) wellnigh universal, a remedy seems the more urgent. The outlook would, however, be more alarming were it not that so large a percentage of students have found means of safeguarding their health by studying as little as possible, or better, by laboring not at all over their books. Indeed, much progress has been made (except among the few misguided, of gentle conscience who especially need succor) in avoiding the microbe of learning, for it cannot be said of the average run of college youth today that they be "commonly valetudinary." The student who spends his time on tennis or boating rather than over the duller duties of the curriculum and who fees tutors for extracting for him the meat of the disagreeables that he "must have" in order to graduate has, by such methods, wellnigh circumvented the dangers of the disease that may attack the learner.

The outlook for health in afterschool life is not so promising. True, jobs are, to some extent, elective, but, on the whole, employers have not been so thoughtful as boards of education, and few professions or occupations are without their tedious and irksome tasks. The health of many of us suffers, in consequence, either from the work itself or in the many hours that must be spent in its doing.

"We have done those things we ought not to have done and we have not done those things we ought to have done and there is no health in us" is a confession which, unfortunately, fits most of us all too well. Being interpreted in the light of both agelong empiricism and of twentieth century science, it sim-

ply means that it is still necessary for us to do things we do not like to do, and that we must leave undone because, perforce, we cannot find the time and the opportunity for them, the things we would most like to be doing. When the day is filled only with agreeable tasks not disagreeably drawn out, the collect will be forgotten.

A WORLD MEDICAL CENTRE FOR NEW YORK

New York is expected to do more than any other of the great cities in our country in many lines of action, but perhaps not all even of the medical profession know that its hospital bed capacity is actually twice the average per capita maintained by other cities. Now the contribution to the world's health is not only to be greatly increased, but New York is to have also, in the prospective Columbia-Presbyterian Medical Centre, a group of buildings where research laboratories, clinical facilities, hospital care and treatment, and a medical school will exist side by side. For we have been backward in this respect —in a systematic and organized handling of our facilities at hand—as compared for instance with Boston, with its beautiful group comprising the Harvard Medical School, and Baltimore with its Johns Hopkins University, medical school and hospital.

For the past few years the School of Medicine of Columbia University and the Joint Administrative Board of Presbyterian Hospital have been planning to build a medical centre on the site of the old American League Baseball Park, known also as the location where Billy Sunday had his famous tabernacle, which is on the corner of Broadway and 168th Street. The funds for Columbia's part in the building program have been assured, and recently the Presbyterian Hospital has launched a campaign for four million five hundred thousand dollars, which is its part of the ten million dollars to be provided.

Authorities agree that the need of such a great institution in New York City does not arise from a lack of facilities of hospital care, for of these we have sufficient and usually the best; but there does exist a lack of coordination and cooperation, which is responsible for a vast amount of waste, especially of effort and money.

The plans for the institution have been made flexible, so that if other institutions established elsewhere are willing to move and are eligible, they will be welcomed. It is planned that among the various departments there may be a psychopathic hospital, a neurological institute, a general outpatient clinic, a children's hospital, a dental school, etc., in addition to the hospital section itself, laboratories, library, and other requisites. The hospital will have ten floors for patients, each one a little hospital in itself, with equipment, staff, etc., of its own. This will make for economy of administration. Another innovation will be hotel service for relatives of patients for a limited time.

The sickness of an old and beloved negro servant of Dr. Oliver White, one of New York's most famous physicians of a generation ago, was the indirect cause of the founding of the Presbyterian Hospital. When this faithful old woman was denied entrance to a hospital because of her race, Dr. White told Mr. James Lenox that the city should have a hospital where such things could not happen. The result was that when Mr. Lenox founded the Presbyterian Hospital in 1872 he had placed at the doorway of the building, where it may still be seen, a tablet declaring the hospital to be for the use of the people of New York "without regard to race, creed, or color." These buildings have not been added to for thirty years and are declared to have outlived their usefulness, which is one of the reasons for the new Columbia-Presbyterian Medical Centre.

The site for the new institution, comprising about twenty acres, has been provided by Edward S. Harkness, a member of the Joint Board, and his mother, Mrs. Stephen B. Harkness.

NEW JOURNAL ON RADIOLOGY

The Radiological Review is a new publication to be issued bimonthly for the purpose of keeping the physician and dentist in touch with the progress of x ray and radium therapy. Harold Swanberg, B.Sc., M.D., is the editor, and the magazine will be published at Quincy, Ill. An editorial in the first issue, covering September and October, 1924, states that, so rapid has been the progress in radiology during the past decade, that it has taxed the energy of the radiologists themselves to keep up to date, and the general practitioners have for the most part not realized the possibilities of the x ray as an aid in the diagnosis of many conditions, nor of the various indications for röntgen and radium therapy. To help disseminate this new knowledge is the purpose of the *Radiological Review.*

Each issue of the review will contain a few original contributions by authorities in the fields of röntgenology and radiation therapy, and in addition many abstracts and excerpts from the important current literature on radiology appearing in the leading medical journals of the world, including seventeen different countries. A final section is devoted to reviews of books on the subject in hand.

In the first issue the original contributions are X Ray Diagnosis in Endocrine Diseases, by William Engelbach, M.S., M.D., and Alphonse McMahon, M.D., of St. Louis; and The X Ray as a Therapeutic Agent in Controlling Pertussis, by Ralph D. Leonard, of Boston.

News Items.

Personals.—Dr. J. Lewis Amster has been appointed chief surgeon of the department of gastrointestinal surgery of the New York City Cancer Institute.

Dr. Alice Hamilton, of the Harvard University Medical School, has gone to Poland and Russia, on behalf of the League of Nations, to study health conditions in industry.

Dr. William Blair Mosser, of Philadelphia, has been granted the William H. Bennett fellowship, created by gift of Dr. Charles H. Frazier, professor of surgery at the school of medicine of the University of Pennsylvania.

Dr. George Schwartz has been appointed visiting surgeon to the Heckscher Foundation Hospital, at Fifth Avenue and One Hundred and Fourth and One Hundred and Fifth Streets, New York.

Dr. Ernest Kingscote of London has recently been in New York.

Hospital Social Workers.—The American Association of Hospital Social Workers has moved its headquarters to 30 East Ontario Street, Chicago.

Venereal Disease Clinic.—The Public Health Committee of Livingston County, New York, and the County Board of Supervisors have planned to open a clinic for indigent persons of the county suffering from venereal diseases.

Insulin Fund.—An insulin fund for the treatment of diabetic patients unable to pay has been established by the Masonic Hospital Foundation at the Broad Street Hospital. Free daily clinics for instruction in the use of insulin have also been established at this hospital.

Ether Day.—The annual celebration of Ether Day was held at the Massachusetts General Hospital, October 16. The morning exercises consisted of demonstrations in the surgical amphitheatre, and at the afternoon meeting Professor Hans Zinsser, of Columbia University, spoke on the progress of medicine, with special reference to bacteriology.

New School for Psychopathic Children.—Dr. V. V. Anderson has resigned as director of the division on prevention of delinquency of the National Committee for Mental Hygiene, and has opened a school for treatment and training of children with behavior disorders and psychoneuroses. The school is to be called The Spruces, and is located at Shrewsbury, New Jersey.

Child Guidance Clinic.—The National Committee on Mental Hygiene has made arrangements for establishing a demonstration child guidance clinic in Cleveland, Ohio, as part of the Commonwealth Fund's program for the prevention of delinquency. The clinic will be under the direction of Dr. Lawson G. Lowrey, and will be held for at least one year, beginning December 1st.

Hospital Bequests.—The estate of Miss Josephine Williams, who died a few months ago in Hartford, Connecticut, has provided for $100,000 and one third of the residuary estate, or more than $400,000, for the Hartford Hospital, and an equal sum to the Massachusetts General. Several other hospitals received smaller sums, the entire amount bequeathed being more than $1,200,000.

International Clinic.—An International Clinic of Otorhinolaryngology, with instruction in English, will be held from January 15th to May 15th, and a similar clinic on Faciomaxillary surgery, from May 15th to June 30th, will be held at the St. Louis Hospital, Paris, France. The director is Dr. Fermand Lemaitre, and the secretary, Jeanne Gobreau, 120 Avenue Victor Hugo, Paris.

Commemorative Bust of Doctor Sanders.—The Alabama State Medical Society has presented to the State a bronze bust of Dr. William H. Sanders, former State health officer and professor in the medical department of the State university for many years, who died in 1918. The bust will be placed at the entrance of the State health department building at Montgomery, near the bust of the late Dr. Jerome Cochran—also a gift of the State medical association.

Mental Hygiene Lectures.—The New School for Social Research, New York, is giving a series of lectures on mental hygiene. Among them are the following: Dr. Bernard Glueck, Mental Hygiene Problems of Childhood; Dr. Douglas A. Thom, Habit Training in Children; Dr. W. I. Thomas, Psychology of Personality Development; Dr. John B. Watson, Behavior Psychology; and Dr. Frankwood E. Williams, Mental Hygiene: Its Personal and Social Assets.

International Conference on Social Work.—At the Toronto meeting of the National Conference on Social Work, held last June, a resolution was passed calling for an International Conference. This will meet at the Sorbonne, Paris, the last week in July, 1925, and excursions will be organized to social welfare agencies in London and in France. In each country a national organizing committee will recruit members, propose subjects, and choose speakers. The chairmen of these committees will constitute the International Organizing Committee.

United Hospital Fund.—The report of the United Hospital Fund of New York, for the year ending June 30, 1924, has been made public, showing that the fund had cared for 714,693 dispensary patients and 209,903 bed patients during the year. Gifts to the fund and income from endowments totalled $586,587, distributed among the fifty-seven nonmunicipal hospitals that are members of the fund, in proportion to the amount of free care given. A total of 1,470,512 days of free treatment were given, constituting forty-six per cent. of the total hospital service.

Harvey Society Lectures.—Dr. Thorvald Madsen, Director of the State Serum Institute of Denmark, will deliver the fourth Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, November 22, 1924. His subject will be "Temperature and Immunochemical Reactions."

Dr. William Einthoven, Professor of Physiology, Royal University of Leyden, Holland, will deliver the fifth Harvey Society Lecture at the New York Academy of Medicine, on Saturday evening, December 6, 1924. His subject will be "The Relationship of Mechanical and Electrical Phenomena of Muscular Contraction with Special Reference to the Cardiac Muscle."

The Post-Graduate Five o'Clock Lectures.—Public Lectures will be given at the New York Post-Graduate Medical School and Hospital as follows during the month of December on Wednesday afternoons at five o'clock:

December 3rd: Dr. Charles Gordon Heyd, "Clinical Types of Goitre—Their Diagnosis and Treatment" (illustrated by lantern slides).

December 10th: Dr. Herman O. Mosenthal, "The Treatment of Essential Hypertension."

December 17th: Dr. William H. Meyer, "Röentgen Examination of the Gastrointestinal Tract."

All practitioners of medicine are cordially invited to attend.

Society News.—The Chicago Council of Medical Women has planned meetings on the fourth Tuesday of each month, to be held at 40 East Erie Street.

The Wisconsin State Medical Association has elected the following officers: Dr. Wilson Cunningham, Platteville, president; Dr. James G. Taylor, Milwaukee, Dr. Henry A. Jegi, Galesville, and Dr. Howard E. Curl, Sheboygan, vice-presidents. A secretary will be elected in January.

The Third Annual Convention of the National Association of Police and Fire Surgeons and Medical Directors of Civil Service Commissions, met in New York, October 8th, 9th, and 10.

Harvard Appointments.—The administrative board of Harvard University Medical School has been recently announced, as follows:

President Abbott L. Lowell, Ph.D., ex-officio; Dean David L. Edsall (ex-officio), chairman; Dr. Algernon Coolidge, Dr. Harvey Cushing, Dr. Reid Hunt, Dr. John L. Bremer, Dr. Walter B. Cannon, Dr. Charles M. Campbell, Dr. Worth Hale, Dr. Simeon B. Wolbach, Dr. Hans Zinsser, Dr. Kenneth D. Blackfan, Dr. Francis W. Peabody.

The administrative board of the Harvard School of Public Health is as follows:

President Lowell, ex-officio; Dr. David L. Edsall (ex-officio), chairman; Dr. Milton J. Rosenau, Edwin B. Wilson, Ph.D., Dr. Hans Zinsser, Dr. Cecil K. Drinker.

The Cancer Commission of Harvard University comprises the following members:

Dr. Robert B. Greenough, director; Dr. Channing C. Simmons, secretary; Charles Jackson, treasurer; Dr. James H. Wright, pathologist in charge of free diagnosis; William Duane, Ph.D., research fellow in physics; Dr. Henry Lyman, research fellow in chemistry; Charles E. Barr, research fellow in biophysics; Emory Leon Chaffee, Ph.D., research fellow in biophysics; Walter S. Hughes, assistant in biophysics; Dr. William L. McNamara, assistant in pathology.

Hospital News.—Christ Hospital of Topeka, Kansas, has awarded contracts for a $500,000 building and improvements to the existing plant.

The new buildings of the Hospital for Joint Diseases, New York, will be dedicated October fifth. There will be bed facilities for 275, and accommodations for treating 1,500 patients during the day. The expenditure has been in the neighborhood of two million dollars.

A new pavilion, containing one hundred beds for private and semi-private patients of moderate means, has been opened at Vassar Hospital, Poughkeepsie, New York. The hospital is planning an appeal for $800,000 to provide a permanent annual income to carry on its work.

Dr. S. S. Goldwater, of New York, has been requested by the managers of the Memorial Hospital of Philadelphia, at Rosborough, to collaborate with the superintendent to survey the needs of the hospital, with especial reference to the erection of a maternity department.

A noteworthy amount of hospital construction is planned for in Los Angeles. The California Lutheran Hospital is soon to start work on the first unit of its $2,000,000 building; plans have been drawn for a new hospital to be known as the Isabelle J. Norris Memorial Hospital, to contain 325 general and 50 maternity beds; and the Clara Bartlett Hospital has purchased land on which to erect a $1,250,000 building.

Foreign Correspondence

LONDON LETTER

(From our own correspondent)

LONDON, *October 18, 1924.*

THE VOLUNTARY HOSPITALS

Dr. F. Kay Menzies, who succeeded that outstanding friend of the voluntary hospital system in Great Britain, as director of hospital services under the joint council of the Order of St. John and the British Red Cross Society has issued recently his report for the last year and his first report. The financial position of the provincial hospitals of Great Britain shows a striking improvement.

Sir Arthur Stanley, chairman of the joint council, contributes a foreword to the report. He suggests that the inquiry of the Voluntary Hospitals' Commission into the additional hospital accommodation required in Great Britain should be extended to cover the general need of hospital accommodation, the special categories in which it is most felt and the possibility of supplying at least part of the accommodation required by better coordination and cooperation. Dr. Kay Menzies expresses the opinion that the strength of the voluntary hospital system and the real justification for its continuance should be based upon the fact that by it is carried out an immense volume of work more efficiently and more economically than it can be done by any other known method or system. At the same time he believes that the charitable public is becoming, quite rightly, more discriminating in the selection of the voluntary institutions which it will support, and therefore any badly managed hospital, which is always more or less in debt, is no friend to the voluntary hospital system.

QUALITY OF DRUGS IN HOSPITALS

Dr. Kay Menzies critizes the large expenditure on drugs in hospitals and is of opinion that there is a considerable amount of unnecessary expenditure on drugs without any real benefit to the patient, and suggests that the question should be investigated by the honorary medical staffs "with a view particularly to determining whether there are any ingredients in each prescription which might be either omitted altogether or replaced by ingredients of equal therapeutic value but costing less."

RETIREMENT OF DR. E. W. HOPE

Dr. E. W. Hope, medical officer of health for the city of Liverpool since 1894, is one of the best public health men of the world. When Dr. Hope took office the population of the city was 540,000, in 1921 it was more than eight hundred thousand, but the total deaths in this larger population were less by nearly one quarter. During Dr. Hope's tenure of office, first as medical superintendent of the Fever Hospital and then as medical officer of health, there have been built up a system of hospitals for infectious disease, an efficient and elaborate port sanitary administration, and all the various essentials of a modern civic department.

At a meeting of the Liverpool City Council on October 1st, the Health Committee officially reported Dr. Hope's resignation and a resolution was passed recording the Council's appreciation of the excellent services at the Health Department rendered by him for forty years, during thirty of which he was medical officer of health. In proposing the resolution, Sir Archibald Salvidge described Dr. Hope as one of the most valuable public officials that Liverpool had ever possessed.

PROCREATION OF UNFIT CHILDREN

The Minister of Health was asked in the House of Commons recently, whether, in view of the continuously enlarging financial responsibilties accepted by the State with regard to unemployment, invalidity and old age, he would state the policy of the Government with respect to the procreation of children who, owing to physical or mental deficiencies, became a charge upon the State funds; and whether he was prepared to appoint a Royal Commission to investigate into the possibilities of improving the calibre of the nation by restricting the procreation of children to persons possessing a recognized minimum standard of physical and mental efficiency. Mr. Greenwood replied for the Minister and said, as at present advised the Minister does not see his way to recommending the appointment of a Royal Commission on this subject. He might perhaps add that he was not aware of the existence of any recognized standards of physical and mental efficiency.

LONDON MEDICAL EXHIBITION

The annual London Medical Exhibition, the fourteenth of the series, was held in Westminster, from October 6th to 10th. The exhibits were good and the attendance was excellent. The display of organotherapeutic products was very large as was that of electricity as a therapeutic agent. Among the exhibitors were many American firms and firms which are represented in the United States.

PARIS LETTER

(From our own correspondent)

PARIS, *October 11, 1924.*

DEATH IS BUSY

News of the medical world these days is a succession of obituary notices. The losses of medicine and surgery are great this fall. Sittings of the Academy of Medicine are being constantly suspended in token of mourning; the opening session of every professional congress is taken up with the reading of memoirs of the dead. Some had not more than local or national celebrity; others were known the world over, at least to their confrères. Of the latter, Lacassagne, Broca and Rochard passed away within the same week.

A PICTURESQUE CAREER

Alexandre Lacassagne died in his beloved Lyons—he was honorary professor at the Faculty of Medicine there—at the age of eighty-two years. The author of *Ripe Old Age* might have lived several years more had it not been for failing eyesight. Some six months ago, on leaving his home, he failed to notice a taxicab. He was knocked down, and he died from the result of his injuries. Lacassagne pre-

sented a remarkable blend of the old and the new. He began his career as *aide-major* (second lieutenant, Medical Corps) in Empress Eugénie's Own Dragoons; at the time of his death he was recognized as one of the founders of modern medicolegal science. And it was typical of the man that his will should set forth that there should be an autopsy for the general benefit of science.

DETERMINING A VOCATION

Had Lacassagne remained in France, it is probable that he would have been an Army surgeon like any other Army surgeon. But he sought transfer to Algeria for service with the *Bataillons d'Afrique,* in which are enrolled all French citizens who, on reaching military age, already have a criminal record. Most of these men are tattooed. The tattoo marks struck Lacassagne's fancy. He studied them closely, divided them into categories, and wrote thereon a monograph which attracted no inconsiderable attention. From tattoo marks, it was logical that he should take up the study of other means of identification of criminals. He published other monographs, on identification by fingernails, teeth and so forth. At about this time the Faculty of Medicine of Lyons, recently founded, was seeking young professors of talent. The Chair of Medicolegal Science was offered to Lacassagne. He accepted it, and in the course of the next thirty years, together with Coutagne and Alfred Bournet, he created invaluable archives concerning criminal anthropology. His *Treatise of Medicolegal Science,* innumerable editions of which have been published, remains a standard work.

CREATOR OF NEW SCIENCE

Lacassagne, as a matter of fact, virtually created a new science in this country. It was largely due to his initiative and to his success that the police surgeon of old, a mere figurehead in the detective stories of fifty or sixty years ago—in Gaboriau, Monsieur Lecocq, the detective, is always a much more important personage than the doctor, while at a later period Dr. Watson is the poor fool to set off the acumen of Holmes—has become the medicolegal expert of the present day, whose word carries weight and whose opinion very frequently dictates the verdict of the jury. Similarly, it is due in great part to Lacassagne's work that the Morgue in Paris has become the Institut Medicolegal and that autopsies are performed by such an authority as Dr. Paul, instead of serving, as in the past, to procure a fee for a broken down practitioner. Lacassagne figured prominently as expert in the Gouffé case, in which hypnotism was for the first time invoked as an argument for the defense—you are likely to have a similar affair in America in connection with the Hight-Sweetin case—and also in the trial of the murderer of President Carnot. Turning from practice to theory, Lacassagne attracted much attention by his refutation of the arguments of Lombroso concerning the criminal born.

THE ULTRAMODERN SCHOOL

Lacassagne was not born in Lyons. He was a regular Southerner, born at Cahors, where he and Gambetta, the great political orator of the young Third Republic, were boys together. But he loved his adopted city, where he taught for so long and where he lived for the greater part of the year. Under his influence Lyons has become a great medicolegal centre. Indeed, the disciples have outstripped the master. There is Dr. Edmond Locard, for instance, who has just published a volume entitled *Detectives in Novels and in the Laboratory.* Some consider that Locard has gone much too far in his application of the hypotheses advanced by Lacassagne. It is certainly a moot question how far a medicolegist can set up as a praphologist. Locard is so enthusiastic over his specialty that he is quite as ready to analyze the alleged handwriting of a forger as the viscera from a corpse. He has scored many successes, but he has learned also that the cobbler should stick to his last. His graphological charts are ingenious but not as infallible as a chemical reaction. The modern medicolegal expert can soon tell you whether the blood on a garment is that of a human being or of an animal; he has no sure tests for handwriting. Consequently, in this latter connection, he should be diffident. Experience has taught Locard the value of this quality. Since his consultation last year in the matter of the notorious anonymous letters concerning the Brazilian president, he has acted with more caution.

A LOVABLE PERSONALITY

Of the other noteworthy dead, Professor Broca was a lovable personality. He was a son of the great Broca, the celebrated surgeon whom Frenchmen look upon as the founder of anthropological science, and he was known more particularly as the surgeon of children. Hundreds of mothers wept at the news of his death. In the course of thirty years he had saved the lives of thousands of children. He had the tenderest of hearts, but concealed it under a brusque exterior which took aback those who did not know him. Early in his practice Broca specialized in infantile osteology, and he studied more particularly all congenital affections; he was a master in all that concerns surgery of the ear and of the brain. All who knew him admired his independent spirit, born of a mind generous and just. He hated all shams and did not hesitate to say so. Thus ever speaking his mind, conflicts were inevitable, and it was only last spring that he fought a duel with swords with Professor Cunéo, which encounter, duly chronicled in this column at the time, ended in favor of Broca.

A BORN RACONTEUR

Eugène Rochard, who was seventy-one years of age at the time of his death, was also a surgeon, but he was the very antithesis of Broca. Always suave in speech and easy of approach, he delighted in telling funny stories, many of them smacking much of the smokingroom of a sporting club. He was a born raconteur. Rochard was the son of a surgeon in the French Navy, in which service he also served for a few years. Like his father, who became president of the Academy of Medicine, Rochard was a strong hygienist, but he was always more of a teacher than a practitioner. He had been a brilliant student himself, for after resigning from the Navy he had become surgeon of the Paris hospitals thanks to remarkable success in examinations, without having been either prosector or interne, which is a most unusual achievement here.

LATIN AMERICAN LETTER

(*From our own correspondent*)

Canal Zone, *October 1, 1924.*

THE PAN AMERICAN SANITARY CODE

One of the most interesting documents which has been circulated in Latin America for a good many years is *The Handbook for the Delegates to the Seventh Pan American Sanitary Conference* which is to convene at Havana, Cuba, November 5 to 15, 1924. This is a volume of 262 pages and is written in English, Spanish and Portuguese. It was prepared and issued by the Pan American Sanitary Bureau over which Surgeon General Hugh S. Cumming, U. S. P. H. S., presides as director with Assistant Surgeon General John D. Long, U. S. P. H. S., as assistant director.

In accordance with a resolution adopted at the Sixth International Sanitary Conference held in Montevideo, Uruguay, December 12th to 20, 1920, the Seventh Pan American Sanitary Conference will make studies of the results obtained and methods employed by the twenty-one republics of the New World in the control of tuberculosis, malaria, venereal disease, leprosy, hookworm and other intestinal parasites and typhus fever. A model food and drug act will also receive consideration.

The most important matter to be taken up by the conference will be the Pan American Sanitary Code which has been prepared by the Pan American Sanitary Bureau in accordance with the instructions of the Fifth International Conference of American States.

The average reader of this letter no doubt finds this galaxy of conferences and conventions rather confusing. The Handbook contains an explanation chapter on "The Genesis of the Pan American Sanitary Code" which in addition to being a very valuable historical document reviewing the acts of the various international meetings of America, makes clear the differentiation between the two types of Pan American Meetings. The first international sanitary assemblage held in the New World was the Sanitary Conference of Washington in 1881. This was a world conference and was conceived and executed by the now defunct National Board of Health of which Dr. James L. Cabell was the president. This was followed in 1889 by the First International American Conference which had to do with many subjects including sanitary regulations on which there was a committee of seven,—which recommended the general adoption of either of the international sanitary treaties which had been entered into by Uruguay, Brazil and Argentina in 1887 and between Bolivia, Chile, Ecuador and Peru in 1888. This was the beginning of international sanitary agreements in the New World.

The Second International American Conference adopted seven resolutions looking to Pan American cooperation in the control of the major pestilences and the establishment and financing of the "international sanitary bureau with permanent headquarters in Washington, D. C." This was the beginning of the Pan American Sanitary Bureau.

The International American Conferences, of which there have been five, consider many things including postal service, customs, trade marks and similar things and sanitation. It became evident at the Second American Conference that international public health merited a conference of its own. Therefore on December 2, 1902, the First International Sanitary Conference was convened at Washington, D. C. At the Second Sanitary Conference the Sanitary Convention of 1905 was ratified. This is the sanitary treaty under which Brazil, Chile, Colombia, Costa Rica, Cuba, Ecuador, Guatemala, Honduras, Mexico, Nicaragua, Peru, Salvador, the United States and Venezuela now operate. At the Seventh Conference to be held at Havana November 5, 1924, the Pan American Sanitary Code, which is intended to modernize the Washington treaty, will come up for ratification.

This is a noteworthy document and the Pan American Sanitary Bureau is to be congratulated on the clarity and common sense which it displays. It displays a broadness of concept unimpaired by obscure verbiage. Its preamble defines its purpose as being that "of better promoting and protecting the public health and particularly to the end that effective cooperative international measures may be applied for the prevention of the international spread of the communicable infections of human beings and to facilitate international commerce and communication," and it is believed that when adopted by the conference and ratified by the senates of the several signatory nations that these things will be accomplished.

PERU REGULATES PHARMACISTS

The National Board of Health of Peru now requires the certification of all persons desiring to practise pharmacy. To secure such certificate the applicant must pass an examination before the Director of the National Board of Health and the Inspection Committee of Pharmacy. Hereafter examinations will be held each year in July and November.

WATER SUPPLY FOR CARACAS, VENEZUELA

The beautiful city of Caracas whose water supply has hitherto had an inadequate water supply of bad sanitary quality is to have a new water works system which is to cost several million bolivars. Catchment basins for the storage of rainwater, aqueducts, canals, the diversion of several rivers and the conveyance of water from El Paradero in the mountains to the capital are all included in the plan.

MENTAL HYGIENE IN ARGENTINA

The Argentinian Department of Hygiene is planning to establish a mental hygiene section which will combat alcoholism and the drug habits and assist and stimulate the proper care of all forms of mental diseases.

HYGIENIC PROGRESS IN BRAZIL

As a part of its recent regulation governing assistance and protection for abandoned and delinquent children, the Brazilian Government has organized the Council of Assistance and Protection to Minors, which is composed of the heads of organizations and institutions caring for abandoned children, officials and persons interested in education and welfare work. The council which is to oversee the care, education, lodging and the moral and physical wel-

fare of unprotected children, has adopted a comprehensive program which has the approval and assistance of practically every charitable, medical and educational force in the City of Rio de Janeiro.

The Association of Brazilian Surgeon Dentists is erecting a building which is to house its free dental clinic for poor children.

Senhor Henrique Autran, Chief of the Brazilian School Sanitation Service, has recently prepared a series of three lectures on the care of babies to be given school classes of girls over twelve years of age. Lectures will also be given to little mothers in all ports of the republic on general hygiene, tuberculosis and the means of preventing the spread of communicable infections.

The Bureau of Investigation of Venereal Disease has opened a new clinic for the free treatment of syphilis. It is well equipped and is operated by physicians competent in the treatment of syphilis. It is open every week day from 5 to 7 p. m.

CHILD WELFARE IN SALVADOR

Salvador, one of the most thickly populated republics of the New World, has recently organized a national institution to protect the child, the teacher and the school. It is known as the Salvadorean School Association, and is directed entirely by women. It will promote child welfare by providing school lunches, a school clothes fund, and medical and dispensary services, including the free administration of quinine or other prophylactic drugs to needy children, and by visiting the homes of sick, backward and abnormal children. Environmental studies will be made and faulty conditions remedied as far as is possible. Other functions will be school sanitation, the assistance of sick teachers, and the exclusion from teaching positions of the physically, mentally, and morally unfit. The Government provides a fixed income for the association, and this sum is increased by private benefactions.

BRAZIL REORGANIZES ITS SANITARY DEPARTMENT

The Pernambuco, Brazil, Department of Public Health, under Sr. Amaury Medeiros, the National Director of Public Health, has been completely reorganized, and now consists of the following sections: sanitary propaganda and education; child hygiene; visiting; nurse training and service; legal adviser's office; verification of deaths; food and milk inspections; general prophylaxis, including campaign against flies and mosquitoes; medical and surgical assistance to the indigent; bacteriological, chemical and food laboratories; preparation of variola vaccine which is sold to neighboring States; commissions for oversight of the sanitary police; antituberculosis league; and prophylaxis of venereal disease. The appropriation has increased from 50,000 milres (about $27,300) in 1894, to 1,560,176 milres (about $851,856) in 1923. The section of propaganda and education publishes many attractive posters which are widely distributed, as well as a monthly bulletin of statistics and numerous articles. The child hygiene section conducts work for prenatal and postnatal care, the inspection of wet nurses, and the examination of school children. In the fight against malaria more than thirty-nine kilometers of ditches were dug and many ponds drained in 1923.

ACADEMY OF MEDICINE PRIZES

The Academy of Medicine of Venezuela offers for competition by Venezuelans the following prizes: The Vargas Prize of 2,000 bolívars (about $386) and a gold medal, for the best treatise on tropical pathology. The José Gregario Hernández Prize, 2,000 bolívars (about $386) and a certificate of honor, for the best treatise on tropical diseases endemic in Venezuela. This treatise must be founded on personal observations and experiences of the author, and must contain a practical new contribution to prophylaxis and treatment.

The Pisquez Prize, 500 bolívars in gold (about $96.50) and a certificate of honor, for the best treatise on the treatment of tuberculosis.

SCHOOL OF MEDICINE ENTRANCE REQUIREMENTS

The Council of the Uruguay School of Medicine has decreed that an entrance examination will be required of all applicants for admission to the school after 1925. A bachelor's degree, or a certificate of successful completion of secondary and preparatory studies, will be required, and the examination will include written essays on physics, chemistry and natural history, as well as a Spanish translation from French and English or German of some scientific work on the subjects studied by the pupils in the preparatory course. Accuracy of translation and style of diction will be taken into account in judging this test.

VENEZUELAN CAMPAIGN AGAINST MALARIA AND HOOKWORM

A national decree has been issued entrusting to the National Health Board of the Rockefeller Foundation the work of planning and executing measures for the eradication of malaria and hookworm disease from the plains region, comprising parts of the States of Guárico, Anzoátegui, Monagas, Aragua, Cojedes, Apure, Carababo, Portuguesa and Zamora.

TUBERCULOSIS SANATORIUM

To care for tuberculous and pretuberculous children, the Brazilian Antituberculosis League has purchased land on Paquetá Island near Rio de Janeiro, and will erect there the Dona Amelia Sanatorium. The new institution will be exclusively a preventorium as soon as a hospital for tubercular children can be erected. During 1922, the league distributed 120,153 litres of free milk to children.

PARAGUAY'S SANITARY CAMPAIGN

The Congress of Paraguay has approved the contract signed with the International Health Board of the Rockefeller Foundation for the prosecution of a sanitary campaign. The work began January 1, 1924, and will continue for five years, 2,500 gold pesos per month being appropriated. This amount will be progressively increased.

INSTITUTE OF LEGAL MEDICINE

There was recently opened in Rio de Janeiro, the first institute of legal medicine in South America. It contains offices for physicians and a judge, an x ray room, a dark room for eye examinations and photography, a library, a morgue, a chapel and other rooms. Two nurses are in attendance.

Book Reviews

IMAGINARY PREGNANCY

Uber eingebildete Schwangerschaften. Von Dozent Dr. R. Hofstätter. Berlin und Wien: Urban & Schwarzenberg, 1924. Pp. 47.

Imaginary pregnancy may occur not only in hysterical, but also in psychically normal women. The author endeavors to show that somatic or functional changes usually lie at the bottom of this condition. Purely psychic factors may also produce symptoms as a result of functional disorders of organs, especially of the endocrine glands. There is no explanation of this occurrence. Cases are cited to show how difficult it is to differentiate between a truly imaginary and an intentionally simulated pregnancy, and various theories are offered in explanation. The author states that the English and American medical literatures contain the greatest number of cases of spurious pregnancy. In some cases it is difficult to determine the existence of a beginning or transient psychic disturbance and whether a psychosis is present or not. An unfavorable diagnosis as to the psyche must be very guarded. Almost all of the cases of imaginary pregnancy showed signs of a functional disturbance of the ovary and, indirectly, of the uterus. The subject of simulated pregnancy is also discussed. A case of imaginary and simulated ectopic pregnancy is cited. The literature on spurious pregnancy in the male is also discussed. In civilized communities it is associated with mental disorders, but the socalled couvade is practised among primitive peoples. Spurious pregnancy also occurs in animals. An extensive bibliography is appended.

INDICATIONS FOR THE INTERRUPTION OF PREGNANCY

Wann ist eine ärztliche Abtreibung rechtswidrig? F. Brupbacher. Zürich: Buchdruckerei Arnold Bopp & Co., 1924.

The question "When is medical interference with pregnancy illegal?" is a new aspect of the subject of birth control. The answer is guided by the fundamental principle of the healing art, that threatening disease must be prevented and existing disease eliminated. How does pregnancy affect women who are suffering from various diseases? Whenever the life and health of the mother is endangered and cannot be treated in any other way, the interruption of pregnancy by a physician is indicated.

Every form of tuberculosis (even the latent) and every type of cardiac disease (especially under poor economic conditions and in association with psychoses) are indications for the termination of pregnancy. In regard to renal conditions, every albuminuria of pregnancy should be considered as serious, but it is a question whether the albuminuria should be considered as a nephropathy. The nephritis of pregnancy frequently goes on to chronic nephritis, may lead to an unrecognized albuminuric retinitis or eclampsia, and may lead to fatal conditions after the pregnancy. Timely intervention is therefore necessary. The question whether otosclerosis requires intervention is still undecided. Chlorosis may lead to pernicious anemia through pregnancy. The latter is cured by interference with the pregnancy, but otherwise it is fatal. Unchangeable poor economic conditions aggravate disease and the indications for intervention are even greater.

With the poorer class of patients the intervention should take place in a hospital. After the second month the indications should be applied more strictly on account of the danger of interference. From the medicolegal viewpoint, the embryo takes human form in the second half of the second month. The medicoeugenic indications for intervention include the following conditions: atrophy of the retina, idiopathic optic nerve atrophy, glaucoma, glioma of the retina, otosclerosis, deaf mutism, muscle atrophy, dementia, psychoses, epilepsy, chronic alcoholism and especially syphilis.

INTESTINAL STASIS

Chronic Intestinal Stasis. (Arbuthnot Lane's Disease.) A Radiological Study. By Alfred Jordan, C.B.E., M.D. (Camb.), M.R.C.P. (Lond.) Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton, 1924. Pp. 230.

Jordan's thesis, based on the teaching of Sir W. A. Lane, is as follows:

In assuming the upright posture man has developed certain bands or ligaments representing "crystallization of lines of force." The purpose of these bands is presumably to aid in the support of the intestines. The first of these adventitious adhesions to develop in many cases, is a band fixing the iliac colon to the posterior abdominal wall, producing what has been named Lane's "first and last kink." This band initiates the vicious circle which culminates ultimately in the severe forms of stasis. Another band frequently met with crosses the terminal ileum, produces the classic Lane's kink in that region, and leads directly to ileac stagnation. When ileac stasis reaches a high degree, the weight of the dilated and overloaded loops pulls on the mesentery of the small intestine. This pull is transmitted upward until it exaggerates the normal duodenojejunal angle and produces a kink in this region. This in turn is followed by stasis proximal to the point of obstruction with enlargement and dilatation of the first three parts of the duodenum. It is the ineffectual attempt of this distended duodenum to empty itself that results in the socalled "writhing duodenum" that Jordan has so often mentioned in his previous contributions.

As the result of the stagnation thus brought about in the respective segments of the intestine, microbic action progresses, local catarrh develops, absorption of microbic toxins occurs into the general circulation, and the tissues of the body "depreciate" and "become vulnerable to the attacks of microbes."

The diseases that may ensue from this morbid sequence include, according to Jordan, practically all the ills that flesh is heir to, particularly ulcer and cancer.

It is obvious from the above that we are dealing with the work of an enthusiast who is not overscrupulous in offering proof to back his assertions. There is no reason to question Dr. Jordan's good intentions. Nor is there any doubt of his industry and application. His acknowledged experience, the

large number of cases here reported, as well as the three hundred odd original x ray reproductions, speak for themselves in this direction. What can be legitimately queried is the validity of the author's basic assumptions and the justice of his conclusions. Thus, it is by no means universally accepted that intestinal bands are the result of "crystallization of lines of force" due to the assumption of the erect posture. In fact the accumulating weight of evidence points heavily to the congenital nature of most peritoneal adhesions, for these are found regularly in infants and in fetuses who have never assumed the erect posture. Perhaps as careful work as any in this connection is the classic study of Samuel Clark Harvey in our own country. Nor is it generally conceded that constipation produces either colonic redundancy or adhesions. It is just as likely, if not more so, that the opposite relation is the true one. As for the claim that cancer or ulcer result from stasis, one could hardly be expected to accept this on the basis of a mere *ipse dixit*.

In conclusion we would say that although the book is undoubtedly of interest and importance to the specialist or to the advanced student of gastroenterology, it cannot be recommended without reservation to the beginner in this field nor to the general practitioner.

CANCER

Cancer—How It Is Caused and How It Can Be Prevented. By J. Ellis Barker. With an introduction by Sir W. Arbuthnot Lane. London: John Murray, 1924. Pp. xii, 416.

This book was written with the avowed object of showing that cancer is essentially a disease of civilization and preventable and statistics have been collected from all parts of the world to prove these points. While other factors of civilization such as environment, ill ventilated houses and unhealthy conditions generally are allowed to play their parts in the causation of cancer, Mr. Barker lays most stress on errors of diet, overeating and overdrinking, but chiefly on the absence from the diet of certain substances and elements in proper proportions necessary to the preservation of good health. The argument pursued is that by eating a diet deprived of such substances or elements, or by eating too much, intestinal stasis may be brought about which if prolonged may result in a poisoning of the system. This poisoning has two results in its influence on the causation of cancer. In the first place, it may supply the irritating foci in the intestines which may excite into activity the cancerous process in those predisposed. All authorities seem to be agreed that this process may be lighted up in susceptible individuals by prolonged irritation, and in the second place, long continued toxemia may so lower the defensive or protective mechanism of the body that a suitable soil is provided in which cancer may take root and flourish. Whether vitamine starvation is the principal starting point of intestinal toxemia is a moot question. The tendency recently has been to deprecate the attributing to the vitamines of the supreme importance ascribed to them by some authorities. It seems now to be the general belief that in the production of a well balanced diet the mineral salts must be present in due proportions, and if this be so the vitamines may be left to take care of themselves, because if the mineral salts are there the vitamines will accompany them. However, whatever kind of diet causes intestinal toxemia, according to Mr. Barker's views, causes cancer, and his contention is that by regulating the diet and by living in a less artificial way in all respects than at the present time, cancer may be largely prevented. The argument that a more simple and a coarser diet and a more primitive mode of living in every way will ward off many diseases perhaps, including cancer, is based on sound premises. As a matter of fact if cancer is a disease of civilization, are not all the chronic diseases more or less diseases of civilization, and ought we not to be able by leading more natural lives to stamp out in time the chronic diseases? Personal and domestic hygiene and simple diet should do much in this direction, and Mr. Barker's book supplies one more plea for such a course.

PULMONARY TUBERCULOSIS

Lungentuberkulose. Von Dr. O. Amrein. Second Edition. Berlin: Julius Springer. 1923. Pp. 141.

It is not often that one sees a German publication dealing with the vast subject of pulmonary tuberculosis which is condensed into 141 pages. It is the second edition of Amrein's book, the first having appeared in 1916. In it Amrein, who is the physician in chief of the Swiss sanatorium Altein in Arosa, describes admirably the development of pulmonary tuberculosis, the pathology, diagnosis, general and specific therapy, climatology, prognosis and the social aspect. In an appendex, Dr. Amrein's resident physician, Dr. H. Heinz, gives a description of the most important analyses which are and should be made in the laboratory attached to a well equipped sanatorium.

In the chapters on the development of the pathological process and the physical diagnosis all the modern ideas are carefully considered. The most interesting discussion is perhaps that on differential diagnosis, wherein the author speaks very lucidly of the mistakes which are apt to be made by taking the findings of dullness and râles in the regions above and below the clavicle as indications that these regions are invaded by tuberculosis. He wisely points out that such conditions may often be found after influenza and that only if these signs do not disappear after a judicious therapy of several weeks is one entitled to make a diagnosis of pulmonary tuberculosis. In bronchiectasis the typical expectoration, settling into three layers, and the general well being of the patient and absence of fever should be the deciding factors against pulmonary tuberculosis. In neoplasms and the lung, the author thinks that when percussion and auscultation reveal large areas of dullness, it is an important diagnostic sign, even if microorganisms which strongly resemble the tubercle bacilli are found. Amrein here recalls the interesting work of Maher, of New Haven, who, at the Washington Congress in 1908, described acid fast nontuberculous bacilli found in cases of malignant tumors of the lung. As other diseases which must be differentiated from pulmonary tuberculosis there are enumerated echinococcus abscesses and the various pneumoconioses and actinomycosis. The author thinks that in typical bronchial asthma the course of the disease and its afebril state should be the de-

ciding factor. He strongly advises against tuberculin injections to determine pulmonary tuberculosis, saying that a positive reaction may only indicate that there is a localized tuberculous lesion somewhere in the body, while if pulmonary tuberculosis does exist the conditions may become aggravated.

Under general therapy, the author protests against long journeys to distant sanatoria or climatic regions. Among the many good medicinal prescriptions given by the author we would wish to mention the one he recommends against small hemoptysis. It is a combination of calcium chlorate, calcium lactic and calcium citrate, of which he gives one half to one gram every two or three hours.

Amrein emphasizes the importance of rest in all stages of the disease, particularly when there is an active process; but he also acknowledges that many patients cannot be persuaded to take the prolonged rest cure (*ewiges Liegen*) and one must resort to psychotherapy and to various means to occupy their minds and convince them of the value of rest. The author comments favorably on Knopf's new method of reducing the respirations in number and limiting them to the diaphragm; he thinks this of value in cases where the patients have learned to control their cough. In the description of the *modus operandi* and the physiological results of this method, an evident but unfortunate typographical mistake occurred. It is stated that by reducing the respiration from twenty to ten a minute, 30,000 excursions of the lung were saved in five hours. It should, of course, read 3,000.

Nostalgia in the tuberculous patient is considered a condition which the physician in charge must endeavor to combat by his own personality; an encouraging, comforting and sympathetic attitude will help materially. The author, of course, realizes the inestimable value of artificial pneumothorax as a means to control severe hemorrhages and in such cases as do not do well under ordinary methods of treatment. As contraindications considerable bilateral involvement, noncompensated cardiac trouble, nephritis of both kidneys, and advanced laryngeal tuberculosis are mentioned. A short description of thoracoplasty and section of the phrenic nerve is given and these are recommended when artificial pneumothorax cannot be performed. In the chapter on prognosis nothing new is offered, but Dr. Amrein's warning concerning the difficulty of foretelling the outcome of pulmonary tuberculosis will bear repeating and may well be taken to heart by all who are called upon to make a definite prognosis. "Sometimes seemingly favorable and light cases progress rapidly and end fatally, while cases considered as hopeless improve and are economically cured, though clinically their lesions persist."

The concluding chapters treat of the hygienic education of the masses and a thorough campaign for timely diagnosis and treatment. The author's appeal for a new international union of tuberculosis workers is pathetic, and he deeply regrets that *L'Union internationale contre la Tuberculose,* inaugurated by England and France in 1919, have excluded their one time enemy Germany. As a citizen of little neutral Switzerland, which during the war welcomed the tuberculous soldiers of all the warring countries without distinction and helped in their reestablishment to health, he pleads for a new union of all the civilized nations to combat the common enemy tuberculosis.

The book can be recommended to the specialist as well as to the practitioner as a concise exposition of all that is known today of the subject of pulmonary tuberculosis.

DIABETES

The Pathology and Treatment of Diabetes Mellitus. By George Graham, M.A., M.D., F.R.C.P., First Assistant in the Medical Clinic, St. Bartholomew's Hospital. Oxford Medical Publications. London: Henry Frowde and Hodder Stoughton, 1923. Pp. x, 179.

New Views on Diabetes Mellitus. By P. J. Cammidge, M.D. (Lond.) and H. A. H. Howard, B.Sc. (Lond.). Oxford Medical Publications. London: Henry Frowde and Hodder Stoughton, 1923. Pp. xiv, 611.

The basis of Graham's book is the Goulstonian Lectures on Glycemia and Glycosuria (1921), which have been revised and amplified. Part I deals with the physiology of sugar metabolism; Part II describes the different types of diabetes, the methods of their differentiation and their treatment.

It is maintained that it is unwise to give any (except vegetable) carbohydrate diet until the fasting value of the blood sugar is brought below 0.12 per cent. for a considerable time. Rigorous dietetic restrictions or large doses of insulin may be necessary to do this. The advantage of the author's method is that only one dose of insulin a day is required and also a much smaller dose. Insulin exhibits the best results in diabetic coma. The causation and treatment of diabetic coma is discussed in detail.

The most practical part of the book is found in the Appendix, which includes the ladder diet used in the medical clinic of St. Bartholomew's Hospital, recipes for the Allen agaragar bran biscuits and agaragar jellies, tables of food values, tables showing the metabolism and growth from birth to puberty, methods of estimating the amount of sugar in urine and blood, tests for diacetic acid and acetone, pentose, levulose and homogentisic acid and the carbon dioxide in the alveolar air. The aketogenic ratio is also discussed. Diagrams which indicate the normal standard of calories to the square metre of body surface an hour and the total calories a day, as well as the basal maintenance diet and maximum calorie diet (insulin), are also given.

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Cammidge devoted over twenty years to an attempt to throw fresh light on errors of carbohydrate metabolism. He found that pancreatic dysfunction alone did not explain all the phenomena observed in diabetes. Howard was in charge of the chemical work. Through the development of modern methods of analysis and processes of investigation a closer approach has been made toward the ultimate solution of the problem of the causes of diabetes. With them the authors have been enabled to advance a scientific basis for the glycosurias and to account for the varying clinical symptoms, prognosis and the effects of different forms of treatment observed in different cases. New methods of handling particular varieties of glycosuria and hyperglycemia were also suggested.

These have been found to pave the way for further developments. Typical cases to exemplify each variety of case or point of treatment are cited.

Normal carbohydrate metabolism appears to depend mainly upon the following factors: 1, the power of the liver and other tissues to lay down glycogen; 2, the balance between the fixed acids and bases of the systemic circulation; 3, the influence of sodium chloride and other salts upon glycogenolysis; 4, the existence of a possible antiferment in the pancreas, which acts upon glycogen; 5, the influence of endocrine glands on glycogenolysis, and 6, the control of the nervous system upon hydrolysis of glycogen into sugar. The plasma is the vehicle by which the transportation of sugar is chiefly carried out in diabetes.

The main disturbances of carbohydrate metabolism depend upon the following factors: the acid base equilibrium, inorganic salts, the hydrochloric acid in the stomach, the pancreas, the liver alone and in combination with other tissues, renal permeability, the ductless glands and the nervous system. This is summarized in a very useful table. The chapter on diagnosis and classification shows the methods of applying the different tests to determine the effective factor or factors involved. The chapter on the principles of treatment deals with the physiological effects of fasting, carbohydrate "cures," vegetable diets, milk diet and casein preparations, drugs, organotherapy and the dietetic treatment. In the chapter on treatment (special application and prognosis) the distinctive features of the various types of true diabetes and glycosuria and the complications are discussed in detail.

The bibliography is very extensive and the entire work is profusely illustrated by charts and diagrams, making this a valuable book to those who wish to keep strictly up to date on the subject of diabetes and its treatment. The point of view is entirely different from that presented in the usual book on the subject.

BONES AND JOINTS

Normal Bones and Joints. Röntgenologically Considered. Two Hundred and Twenty Röntgen Ray Studies on Sixty-one Full Page Plates and Thirty-four Text Illustrations. Annals of Röntgenology, Volume Four. By Isidore Cohn, M.D., F.A.C.S., with a foreword by Rudolph Matas, M.D. New York: Paul B. Hoeber, Inc., 1924. Pp. 218.

This is volume IV of the *Annals of Röntgenology,* edited by James T. Case, M.D. It is printed throughout on heavy calendered paper and is a perfect example of book making.

One subject very exhaustively covered is the normal radiographic anatomy of the elbow, from birth to adult life, with the errors in the interpretation of röntgenograms due to ununited epiphyses and the like. A sufficient number of radiograms of actual fractures and dislocations are given in addition to normal examples which in some cases had been misinterpreted. The shoulder, wrist, hip, knee and ankle joints are treated in the same useful manner though more briefly.

A large and very important part of the volume fully describes the various centres of ossification in the above mentioned regions when they first occur, when they are complete and, in the case of epiphyses, when they unite. The author presents not only his own observations fully illustrated by radiographs but also records the observations of Gray and other anatomists and also of Rotch and other clinicians. If is stated in the preface that this information is of great value not only to surgeons but also to pediatrists and endocrinologists.

To the reviewer it seems that the greatest use that can be made of this section of the book is in determining what we may call the osteological age of children or young persons. The late Dr. Rotch proved conclusively that this was a reliable measure of mental age which in cases of retarded development is very much less than the actual age in years or what would be indicated by size and appearance. Thus the reviewer knows a young man of twenty with the mind of a perfectly normal boy of twelve and also the ossification development of a child of twelve. The reviewer does not regard these facts as cause and effect but both as arising from a common cause. The röntgenologist would report the developmental age and recommend that the patient should not be forced in school or factory beyond this retarded development. The present book is the best aid to the röntgenologist in such a study that has come to our notice.

MALIGNANT GROWTHS

Allgemeine Pathologie der malignen Geschwülste. Von Dr. Max Borst, Professor der allgemeinen Pathologie und der pathologischen Anatomie der Universität München. Mit 21 Abbildungen und 6 Tafeln. Leipzig: Verlag von S. Hitzel, 1924. Pp. iv, 322.

The pathology of malignant neoplasms is studied from the viewpoint of the most recent experimental evidence. This book is based upon the author's contribution to Zweifel-Payr's *Handbook on Malignant Tumors,* which has been elaborated by additions to the text and additional illustrations, an extensive bibliography, a table indicating the classification of tumors according to histogenetic principles and, principally, by the addition of the chapter on etiology. The index and the very extensive bibliography at the end of the book are very valuable. Only the most recent literature is cited.

Tumor formation is considered as the resultant of cellular degeneration, on the one hand, and of the surroundings of the cells and the entire body on the other hand. Both of these etiological complexes may contain hereditary and congenital, as well as acquired factors. Constitutional factors and predisposition must also be considered. Therefore they may be general, local (organic and systemic) and cellular in origin. The chapter on general morphology considers the various tissue elements and the total organization of malignant tumors. The chapter on general biology includes the functional activities of tumor cells, the malignancy, the growth and local methods of dissemination, the formation of metastases, recurrences, the general reactions (cachexia, etc.) and spontaneous recovery. The histogenesis of malignancies is considered.

Blastomas are divided into two main groups—those of connective tissue and those of epithelial origin. A third group consists of mixed tumors. All three groups show homotypes (mature) and heterotypes (immature). Irritation is only a contributory cause of malignancies. The parasitic and endogenic theories are discredited. General bodily conditions, the constitution and systems of organs, tissues and, finally, the constitutional predisposition of cells must be blamed for the causation of cancer. The chapter on experimental tumor formation is very

comprehensive. The various types of sarcoma, carcinoma and special forms of malignancies and malignant mixed tumors are discussed in detail. The table of classification of tumors according to the tissue of origin is very helpful.

PREHISTORIC MAN

The Giant Cat. Or the Quest of Aoun and Zouhr. By J. H. Rosny. Translated from the French by the Honorable Lady Whitehead. New York: Robert M. McBride and Company, 1924. Pp. 242.

It is fitting that a French writer should unfold this tale of prehistoric man. The most famous culture sites known today are in France, and recent investigations have brought them to the fore in current interest. An attempt to recreate the life of man on the brink of modern thought, together with the correlation of much scientific data, has resulted in a successful whole. Especially is the prodigality of tropical nature stressed, in that experimental stage of evolution where the preying of the carnivores on animal life counted for very little since life was so fruitful. The teeming forests and lowlands, the rank beauty of the landscape, are suggested, and yet not over stressed, with a subtle understanding of primitive man's more utilitarian view of life.

Two men, one of a mighty race, the other, the weakly survivor of the "men without shoulders" of higher mental but lower physical rank, make the grand tour, so to speak, of Chellean Europe, we take it. They venture where their kin have never been. They reach hunting fastnesses to which man in his rise has driven types of beasts that as types are slowly dying out. They find the sabre tooth mammoths larger than any their sages could sing of, the giant cat of the rocks, a spectre that must have ruled dreams for generations. They also find man, of varying grades of development,—and the battle between humans is no more ruthless than between man and beast, and beast and prey. But the reason for man's ultimate victory is seen in the gradual disentangling of thought. The weakling must think to survive. He devises ways and means of livelihood, he remembers, and he senses into the future. Although his stock will die out, he has increased the sum total of primitive knowledge. The next thinker who is forced to live by his wits will have a broader base to build upon. The next age of man will have a wider horizon.

To get the *feel* of prehistoric days, read this book. It may not be altogether successful, it lacks the grip of Jack London's *Before Adam,* but it will serve excellently to give the reader who spends little thought on whence we came some concept of the intricate, marvellous process of evolution.

HUMOR

Munchausen, M.D. By Julian Walter Brandeis, M.D. New York: The Quip Publishing Co., 1924.

In this interesting little volume, the author, a well known physician, takes his own 'round the world flight—of fancy. Dr. Munchausen makes an affidavit swearing to the truth of the narrative, and is supported by the signed statements of such famous truth tellers as Gulliver and Sinbad. Being just out of colloge and already earning an income of vast proportions from his practice, Munchausen decides that he needs a vacation and takes a tour which leads him into all sorts of unexpected places and makes him a participant in or witness of the most marvellous experiences that a medical man possibly can encounter. Whether he jumps head first into love with the Flowerjah of Blootch, or into the waiting jaws of a hungry man eating shark *á la Jonah,* he always manages to come out of his scrapes unscathed and ready for the next experience.

All the medical man's favorite poses are dragged out so we can see them in their humorous light, and the *isms* and *ists* come in for their share of the fun.

The reviewer got a good many hearty laughs out of this little volume and can commend it as a splendid tonic after a hard day's grind. There is a vast amount of real good fun between the covers of this little book, which any medical man with a normal liver will enjoy.

Medicoliterary Notes.

The work of the American Relief Administration in Russia is praised in the highest terms by Sir Philip Gibbs who contributes an article on the subject to a recent number of the *World's Children* (London). Among other forms of relief work done was the sending of 1,742,401 individual food packages, each one containing a normal ration for three persons for one month. Needless to say, this was often made to last much longer. It is estimated that these individual food remittances, apart from the mass feeding in the famine areas, were equivalent to rations for twelve million people for a month. The mass relief supplies went to starving rural districts and to children, while the special food packages were sent to students, teachers, artists, scientists, etc., whose poverty was perhaps hidden from the public eye but none the less tragic.

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The *Atlantic Monthly* for October contains an entertaining and clever article from the pen of Simeon Strunsky, who takes Lamarck's doctrine on the transmission of hereditary characteristics and applies it to the workings of governments. The title is *Notes from a Front Page Laboratory.*

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The U. S. Bureau of Public Roads has recently made a study of milk transportation for several of our large cities. This survey, a report of which appears in a late issue of *Public Roads,* reveals that the motor truck has largely replaced all other methods of delivering milk to cities.

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When we resort to strong language over mistakes or omissions in the New York telephone directory, we are prone to forget that the printing of these volumes is probably the biggest printing job in the United States as well as the most highly specialized; that, according to a recent report of the Bell system, about fifty thousand changes in the name list are made each year; and that it takes thirty thousand tons of paper annually to make the books.

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Books, the *Herald Tribune's* new literary review, reprints a letter from the *London Times Literary Supplement* giving Sir William Osler's medical opinion on the nature of the poet Byron's last illness and the cause of his death, which has always been the subject of much discussion. The letter states that in 1910 Osler read the accounts and documents, including Dr. Bruno's report of the postmortem examination, relating to the poet's last illness and death, and made the definite statement that he felt quite sure that Byron's illness must have been meningitis, and that therefore the doctors could not have possibly saved his life by any means whatever. Since, as is well known, Osler was unusually familiar with postmortem pathological conditions as well as with symptoms during life, his opinion should

have great weight and should be publicly recorded. In Harold Nicolson's recent book, *Byron: The Last Journey*, it is suggested that typhoid fever or pernicious malaria might have caused death.

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One of the books of the month, published in London by Hutchinson & Company, is the life of Eleonora Dusé by Jeanne Bordeux. It is called *Dusé of the Beautiful Hands* and is said to contain a number of incidents in the life of the great actress heretofore unknown to the public.

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A recent number of *Kosmos* (Stuttgart) contains an interesting article by Hans Welten entitled "Hunger: A Biological Study."

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Dr. Little's Dog Book is one of McBride's late publications. The author is George W. Little, D.V.M., who for many years was head physician of the American Society for the Prevention of Cruelty to Animals. The book is designed for the layman as well as for the breeder of pedigreed dogs, and gives valuable information on the care of dogs in health and sickness.

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O. Henry's birthplace, Greensboro, N. C., has erected a stone tablet to mark the site of the house where he was born. The stone was unveiled by the granddaughter of the uncle in whose drug store O. Henry worked.

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When a workingman of Pressburg recently felt that one of his back teeth had ached too long, he went to a dentist for help. What was the dentist's surprise when he hauled out, not a tooth, but a bullet. Then the victim remembered that while in the Austrian army during World War he had been hit in the jaw by a spent Russian bullet, which he thought had dropped out after inflicting a slight flesh wound.—*New York Times.*

* * *

Louise Pound contributes an amusing and clever article to a recent issue of the *American Mercury* called Notes on the Vernacular. She discusses and explains why both the omission and inclusion of the letter R make for humor, and dissertates upon the sources and effects of various forms of abridged writing, of indefinite names, and other language forms pecular to American dialect.

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The London correspondent for the *Irish Times* (Dublin) comments as follows upon *Fata Morgana*, successfully produced last season in New York by the Theatre Guild: "*Fata Morgana*, at the Ambassador's Theatre, is a feeble and inelegant effort to show the awakening of love and the inevitable disillusionment. The author has made the subject of the experiment, not a sweet young girl of eighteen, but a youth of the same age. If tears were a sign of intense drama, then this would be a good play, for everybody is either in tears, or on the verge of them, at least once in the evening, and the curtain comes down on Tom Douglas, the young film star, crying bitterly for his first love. . . ."

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The same paper reports a marked and continued success for Sean O'Casey's clever play, *Juno and the Paycock*, now running in Dublin, and, rumor has it, to be brought to New York in the not far future.

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Karel Capek, the brilliant young Czech author, comes of a medical family. He speaks several languages, and is conversant with ethnology, folklore, psychology, geography, physics, and chemistry. His one slight ambition at present is to write one hundred books before he dies, and to absorb all human knowledge. "The man who knows all must die," he writes, "but I hope not to die till I know all."

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The *Living Age* has converted its first issue of each month into a much fuller monthly edition in order to include the vast amount of material too full or detailed for brief weekly comment. The monthly edition for October 4th contains full excerpts from *The Guardsman*, the play of Franz Molnar, author of *Liliom* and *The Swan*. *The Guardsman* is now running in New York under the direction of the Theatre Guild. The same number of the *Living Age* contains the translation of an article by A. Rogozhin in *Dni*, the Russian daily paper published in Berlin, entitled *The Islands of the Dead*, and giving a full review of Albert Londres' book, *Au Bagne*, which described so vividly the horrible conditions at Guiana, the French government's prison, that it has been abolished.

* * *

The September issue of the *North American Review* contains an article by Winifred Kirkland on *The Doctor on the Stage*, that usually much maligned victim of the dramatist's pen. By the way, one who is not thus treated is the young military surgeon in *What Price Glory?*

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Who's Who in America, 1924-1925, published by Marquis in Chicago, is just out. It has now attained the scope of more than 3,700 pages of biographical material.

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The Children's Foundation of Valparaiso, Indiana, has recently issued a survey and review of present day knowledge on education and child welfare under the title of *The Child: His Nature and His Needs*, edited by Prof. M. V. O'Shea, of the University of Wisconsin. The contributions are by authorities on the various phases of the subjects treated in the book.

* * *

The *Yale Review* for October contains an unusual number of interesting articles, among them The Future of Great Britain, by Prof. Raymond Turner; The Education of Industry, by L. P. Jacks; Charity in the Work of May Sinclair, by Jean de Bosschere; Rasselas in the New World, by Chauncey Brewster Tinker; and Mr. Galsworthy as Artist and Reformer, by Dorothy Martin. There is also a letter from Henry James to an old friend written in 1915 and explaining why he was impelled to renounce his American citizenship.

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Arthur Symons, the well known essayist and critic of art and literature, has in the *Golden Galleon* for October a most enlightening article on Duse and D'Annunzio. He throws many interesting sidelights on the art and characters of both, including Duse's own comment on D'Annunzio as an artist. He quotes her as having said to him: "You ask me what I think of d'Annunzio. He is a great poet, a great lyric poet, but not in the real sense a dramatist." "In these words," add Symons, "she confessed the most vital fault in the man whose fame she had made." Another interesting contribution on d'Annunzio is in the June issue of the *Dublin Magazine*—A Visit to D'Annunzio, by J.M.H.

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Julian S. Huxley, writing in a recent number of the *Manchester Guardian*, describes the German zoologist, Spemann's, recent discovery of the cause of differentiation as shown in the fertilized egg of the newt and other amphibia. After the first stage in which the egg seems to consist only of raw materials for the constructive processes, "the next step is the division of the egg into two, four, eight, and so on till several dozen or (in the newt) several hundred small cells have been produced from the original large one. Then, in the newt and other amphibia, a new process occurs. At one place near the equator of the egg, the smaller, less yolk laden cells begin to multiply more rapidly and to grow down as a fold or flap over the large yolky cells. The infection, so to speak, spreads sideways; so that, as the fold extends downward, it enlarges laterally, its free edge becoming at first crescentic, then semicircular, then horseshoe shaped, and finally circular. The circle diminishes until at last the whole of the yolky part has been overgrown. The edge of the fold is called the lip of the blastopore. Directly after this the first signs of differentiation become apparent. The side on which the fold first appeared becomes the back, for here appears a thickening which soon becomes converted into the rudiment of the brain and spinal cord. Below this the notochord, forerunner of the backbone, is formed, and on either side the rudiments of the muscles. The cavity of the digestive tube appears below the notochord, and the kidneys on either side. In a very short time the rudiments of all the chief organs of the future tadpole are blocked out; differentiation has started, and, once started, continues to its appointed end."

Abstracts from Current Literature

GYNECOLOGY AND OBSTETRICS

Dysmenorrhea. — According to H. Meyer-Rüegg (*Schweizerische medizinische Wochenschrift,* April 3, 1924) dysmenorrhea should not be considered as a symptom, but rather as a sharply defined disease picture, with the exclusion of all pains produced by inflammatory or other organic affections of the genitals—a purely functional disturbance (uterine spasm) produced by a combination of psychic and menstrual processes. It is for this reason that dysmenorrhea is relieved by psychic treatment and the use of antineuralgic remedies. The author advises against local treatment, which, in addition to the ethical injury, also give uncertain results.

Local Anesthesia in Minor Gynecological Operations. —Stephan Polgár (*Zentralblatt für Gynäkologie,* April 5, 1924) states that owing to the complicated nerve supply of the female genital organs conduction anesthesia of the pudendal nerve is not sufficient for the purpose of absolute painlessness and that in addition the inferior hemorrhoidal, the posterior labial, perineal, the posterior cutaneous femoral, the anococcygeal and the dorsal nerve of the clitoris must also be anesthetized. Conduction anesthesia of the pudendal nerve (perineural injection) is obtained with the following technic: The tuberosity of the ischium is fixed with one finger and the spine of the ischium with the other through the vagina, and the needle is controlled in its passage either through the vaginal wall or the perineum toward the tuberosity. If the perineum is torn circular injections are made around the rectum.

Paradoxic Ischuria in the Puerperium.—W. J. Zempléni (*Zentralblatt für Gynäkologie,* March 29, 1924) considers paradoxic ischuria in the puerperium to be the result of a paralytic disturbance of innervation from trauma. It is frequently observed, especially in head presentations, that the slowly passing head in the pelvis compromises the urethra when the bladder is overfilled. If there is no atony or paralysis, the mother complains of great pains and a marked strangury. Total or partial incontinence (without retention) is also often observed in the puerperium. The complication of retention with incontinence constitutes paradoxic ischuria.

Eclampsia and the Justification for Active Treatment. —The investigations of Walter Fürst (*Zentralblatt für Gynäkologie,* April 19, 1924) confirm the old belief that the early treatment of eclampsia is far better than late treatment. The most effective early treatment consists in rapid delivery, which eliminates the etiological factor of the eclampsia, pregnancy, and also the injurious effects of the labor. The only reliable method of rapid delivery is section, provided the soft parts are sufficiently dilated. All of the dangers that are usually attributed to rapid delivery or the active method of treatment do not apply in the case of transperitoneal cervical section. The outlook for the preservation of fetal life is best with abdominal Cæsarean section. All cases of eclampsia should be given clinical treatment. Only when such is impossible should an expectant plan of treatment be instituted.

The Relation of Endometrium to Ovarian Function.— C. C. Norris and M. Vogt (*Surgery, Gynecology and Obstetrics,* January, 1924) believing that the endometrium possesses a definite endocrinal function, and that this function operates in conjunction with the secretory function of the ovary, and is probably subservient to it, present the following conclusions:

1. The theory that the endometrium possesses an endocrinal function is at present based only upon physiological and clinical proof. The fact that the endometrium differs histologically from other endocrinal glands is no argument against the theory, since all other endocrinal glands differ one from the other, in this respect.

2. The endometrium probably possesses a definite endocrinal function, which, like other endocrinal glands, acts in conjunction with certain socalled ductless glands, particularly the ovary, to which it is most likely subservient.

3. The endocrinal function of the endometrium probably fluctuates with the menstrual cycle, being most active during the premenstrual period.

4. The chief clinical evidence on which this theory is based lies in the established fact that the proportion of women who suffer from nervous phenomena after a hysterectomy with conservation of one or both ovaries is much greater than that of those who exhibit painful or palpable changes in the conserved ovary.

5. The most conclusive evidence is found in those patients who have been treated with radium for the arrest of benign hemorrhages. It is difficult to conceive that in almost every case so treated both ovaries are rendered functionless. Furthermore, there is much experimental evidence that tends to show that in these cases the action of radium is limited to the uterus.

6. In operations upon the uterus, ovarian conservation is of distinct value, even if panhysterectomy is performed; the ovaries function better, however, and have a longer functional life, if part of the endometrium is preserved.

7. The thickened and permanent premenstrual stage of the endometrium, so frequently present in patients suffering from uterine myomata, is the result of stimulation of the endometrium by the presence of the tumor, and accounts for the prolonged bleeding that is often present.

Chronic Leucorrhea.—A. H. Curtis (*Surgery, Gynecology and Obstetrics,* Nov. 1923) says that the sources of chronic purulent leucorrhea can usually be definitely localized. These foci of infection are important factors in the production of systemic disturbances, as well as local distress. Cervical discharges may persist after the disappearance of infection; this is notably true if extensive hyperplasia of the cervical glands has occurred. Relief from these innocent discharges is not essential, provided they cause no mechanical annoyance. Available measures in the control of chronic leucorrhea consist in eradication of gland infection in the vicinity of the urethra, dilatation of cervical strictures, and destruction of hyperplastic glandular tissues of the cervix. Whether the latter is to be accomplished by endocervix removal or through the use of radium should depend upon the character of the pathology encountered, modified by the experience of the surgeon in charge. Destruction of infected Skene's ducts and urethral glands, together with thorough dilatation and radium treatment of the cervix, has been followed by recovery from chronic leucorrhea in eighty-seven per cent of one hundred and four patients.

Cardiopaths in Pregnancy and Labor.—W. C. Danforth (*Surgery, Gynecology and Obstetrics,* December, 1923) reports on a number of cases of decompensated hearts with the following conclusions. The functional capacity of the pregnant woman's heart should be considered as early in pregnancy as possible. The aid of the internist in this and other things is of the greatest value. Immediate attention must be given to any evidence of overstrain of the heart. Of the lesions commonly seen, mitral stenosis and myocarditis are by far the most to be dreaded. Delivery by the natural passages is ordinarily preferable, aided by morphine in the first stage and operative delivery if needed in the second stage. Cæsarean section is, as a rule, not the best treatment for women with decompensated hearts.

Afterresults of the Abdominal Operation for Retroversion.—Alice Bloomfield (*Lancet,* February 2, 1924) states that cases of retroversion complicating prolapse should be treated as cases of prolapse. Abdominal operation alone rarely, if ever, cures these cases, and their inclusion in statistics of operations for retroversion leads to confusion. Retroversion is not a disease in itself and never, with the possible exception of the Bonney syndrome, gives rise to a definite train of symptoms. It is usually complicated by other pathological findings, and it is these, as a rule, which indicate operative treatment, and upon which the relief of symptoms largely depends. If no complication is found on clinical examination, and sterility is complained of, operation is sometimes indicated, as closed tubes may be present and a better chance of conception seems to be given after dilatation of the cervix, if the uterus is replaced and retained in the anteverted position. In many cases an undoubted nervous element is present, the significance of which must be carefully assessed before operative treatment is undertaken, and in considering the result of such treatment. Pregnancy does not seem to exert any deleterious effect on the clinical results of treatment beyond the fact that it makes prolapsus more common.

Baden Statistics on Eclampsia in 1921 in the Light of a Functional Therapy.—W. Gessner (*Zentralblatt für Gynäkologie,* February 16, 1924) reports that the active eclampsia therapy gives the most rapid and complete restoration of disturbed function, as is shown plainly by the frequently existing complete anuria, because it leads immediately to the relief of tension of the abdominal wall and through it to a normal renal circulation and function. It is better and relatively less dangerous than any other procedure and it is a true functional therapy. In the treatment of puerperal eclampsias, the Veit procedure with venesection is usually sufficient in those favorable cases, in which the eclampsia appears in the first few hours after delivery. However, it is not sufficient in the far more serious cases of late puerperal eclampsia. Nevertheless, the late cases of puerperal eclampsia will show the same mortality as the early cases of eclampsia of pregnancy (up to the seventh month). In these cases only a timely operative interference will be of value. The important element is not the operative interference but the timely interference. Podalic version or perforation is preferable to the loss of both the mother and the child.

The Starvation Toxicosis of Pregnancy.—Erich Opitz (*Zentralblatt für Gynäkologie,* January 12, 1924) believes that the sudden requisition for material needed for the development of the fetus in the uterus deprives the maternal tissues of these substances, resulting in deficiency manifestations, such as hunger edema, scurvy, beriberi and similar conditions. He does not believe in the formation of a special kind of toxin and he calls attention to the striking fact that pregnancy, carcinoma and severe chronic infectious diseases have in common a series of modern reactions, such as cobra poison hemolysis, sedimentation rapidity of red blood cells, Abderhalden reaction, stalagmometry, high antitrypsin titre, and complement fixation, in which process the growing ovum particularly and a growing neoplasm are considered as factors which deprive the organism of certain factors. The author supports his theory by the similarity between the manifestations of the toxicosis of pregnancy and those of known deficiency diseases, especially the starvation edema of war and the deficiency diseases in infants from not getting sufficient fat. He also shows that from the beginning of pregnancy the centre in the floor of the third ventricle, which seems to control the metabolism of water, sugar and sodium chloride is influenced by the pregnancy, and its function is diverted by way of the vegetative nervous system as a result of the influence of the implanted ovum.

Chemical Hysterectomy. — W. Wayne Babcock (*American Journal of Obstetrics and Gynecology,* June 1924) describes packing with zinc chloride tape as a rapid and easy way of obtaining the effect of a hysterectomy in certain selected nonmalignant conditions. The endometrium of the cervix, corpus and cornu, with a thick layer of the surrounding metrium, is quickly sterilized and devitalized. and is expelled after some days as a sphacelus, leaving a fibrous uterine mass without cavity or discharge, resembling an infantile uterus. The zinc chloride gauze tape used is about one centimetre wide, placed in saturated zinc chloride solution and blotted up before use with sterile dry gauze sponges to avoid excess of solution dropping from the tape. Local, nitrous oxide or narcotic anesthesia is used during the operation. The cervix and internal os are dilated sufficiently for the introduction of a uterine packer, the uterine cavity explored, and a packer, preferably with an obturator, introduced well through the internal os. The cervix and uterine cavity are thoroughly packed, with the vagina meanwhile protected by a strip of gauze impregnated with dry sodium bicarbonate. Finally, the vagina is so packed with other strips of the soda gauze that the cervix and the caustic tape issuing from the cervix are completely surrounded. The packing is withdrawn in seventy-two hours if fifteen mils or less of gauze are used, in eighteen hours after thirty mils of gauze, and in four and a half hours after sixty mils. With uterine walls only three millimetres thick, the caustic should be left in over six hours; with walls six millimetres thick, not over twelve hours, and with walls one centimetre thick, not over twenty hours. The patient should usually be kept in bed for a week, and under supervision for nine days. If the slough is not expelled by this time it should be removed with forceps or the finger, provided it is no longer attached to the uterine wall. The procedure is indicated quickly and permanently to destroy infected metrium and endometrium, as in chronic uterine infections that resist milder measures and in puerperal septic metritis; to produce amenorrhea, e.g., when absolute permanency, sterility or eradication of associated uterine infection is desired, in nonmalignant metrorrhagia where destruction of uterine function is desired and in that accompanying advanced pulmonary tuberculosis; as a simple sterilizing procedure in mental and moral defectives, and to eradicate recurrent uterine polyps, submucous fibromyomas and benign interstitial tumors lying close to the endometruim, and recurrent pedunculated tumors of low malignancy.

Incidence of Bacterial Invasion of the Uterus and Its Contents.—F. C. Goldsborough and B. Roman (*Buffalo General Hospital Bulletin,* April, 1924) found that of a series of two hundred consecutive confinements almost twenty-five per cent. showed contamination of the placentas with bacteria. It seems probable that bacteria find their way into the uterus soon after the rupture of the membranes in the vast majority of cases. The longer the duration of labor after the membranes have ruptured, especially if vaginal examinations have been made, the more likely the uterine contents will become markedly contaminated. The question of transmigration of bacteria through the placenta and its effects upon the mother on the one hand and upon the fetus on the other hand, as well as the incidence of this occurrence, will be dealt with in later reports.

Ultraviolet Ray Treatment in Gynecology.—Elsa Sillman-Lönnroth (*Finska Läkaresällskapots Handlinger,* January-February, 1924) narrates her experience in Prof. Wegelius' Clinic at the University of Helsingfors in the treatment of such affections as oophorosalpingitis and parametritis, endometritis, vaginitis, amenorrhea, kraurosis vulvæ, myoma uteri and pruritus vulvæ, the rays from a specially constructed lamp being projected through a vaginal speculum. This artificial heliotherapy proved of value in promoting resorption in subacute and chronic inflammatory processes, while the amenorrhea depending on ovarian dysfunction was not remedied.

The patients were mostly bed cases in the hospital, a few being ambulant. The author gives a résumé of the history of light therapy and ultraviolet rays first used by Finsen, of the various lamps and their later modification for radiation of the genital tract, the apparatus used in her own observations being that constructed by Dr. Landeker (1922) of superior therapeutic efficiency in the intensity of its ultraviolet rays, and similar therapy with the same lamp is quoted from reports by Colombino, Mozzetti-Monterumici and V. Bardeleben. The applications last from a few minutes to one hour and the rays seem directly invigorating. Their bactericidal effect is not demonstrated fully, but in two cases gonococci disappeared after two to four radiations, while for weeks previously cultures had shown their presence. That light therapy favorably influences metabolism and oxidation is the belief of the author and the observers she quotes.

Treatment of Dysmenorrhea and Sterility.—Walther Schmitt (*Zentralblatt für Gynäkologie,* February 16, 1924) obtained the following results: Of 134 women treated for dysmenorrhea, 64.1 per cent. were cured permanently, 18.6 per cent, were cured temporarily or improved and 17.1 per cent. were not improved. Of these, 40.1 per cent. were entirely satisfied with the treatment, 28 per cent. were satisfid and 29.1 per cent. were dissatisfied. Of 81 women treated for sterility, 37 per cent. were cured. The material shows that the acute anteflexion of the uterus and the stenosis of the internal and external os of the cervix of the uterus play an important part in the etiology of dysmenorrhea and sterility. Among the 150 women treated, absolutely normal genitals were found in 28.6 per cent. of the cases, 39.3 per cent. showed a sharp anteflexion of the uterus, 21.3 per cent. showed a stenosis of the internal os and 8 per cent. showed a stenosis of the external os; 2.6 per cent. showed an infantile uterus. Neither the genital findings nor any existing occupational injury, nor the course of the menses had any appreciable effect on the treatment. With the aid of laminaria, curettage and cervical plastics a large part of the dysmenorrhea cases and some cases of sterility may be cured. However, the number of uncured cases is so large that the results are unsatisfactory. In the future the author intends to direct his attention to the factors of constitutional anomalies.

Etiology of Prolapse of the Uterus.—Th. Heynemann (*Zentralblatt für Gynäkologie,* January 19, 1924) believes that some cases of prolapse of the uterus are due preeminently to a constitutional predisposition, as in the cases of prolapse in nulliparæ and in the pronounced asthenias with relaxed musculature and connective tissue, with enteroptosis and the simultaneous existence of hernias and anal prolapse. On the other hand, there are women who seem to be constitutionally normal and in whom prolapse does not occur in spite of severe injuries to the pelvic floor. However, the constitutional predisposition does play an important part in the causation of prolapse, and the conditions are similar to those in which there is relaxation of the abdominal wall after parturition. Marked distention of the abdomen resulting from large fetuses, twins and hydramnios cannot be questioned as a cause of prolapse. Nevertheless, prolapse occurs in relatively healthy women, and in the majority of women particular injuries during and after labor, resulting in distinct injury and relaxation from prolonged labor with large fetuses, surgical procedures in delivery, advanced age in primiparæ and the premature resumption of work and overexhaustion, must be made responsible.

Ovaries and Menstruation. — Eliseo Ramirez says (*Endocrinology,* March, 1924) that not only does the corpus luteum have no function in initiating menstruation, but its presence impedes the menstrual onset. He has been able to demonstrate an antimenorrhagic action of extract of corpus luteum in cases of hemorrhage of ovarian origin. Ovariotomized rabbits injected with an extract of menstrual blood, when their uteri were studied histologically, showed the atrophic changes in the muscular structure characteristic of castration, whereas the mucosa and uterine glands took on the characteristics seen in normal estrus. There was no epithelium covering any part of the surface. The author believes that these experimental estrual changes are due to a lipoid produced by the interstitial cells of the ovary, carried to the uterus, and discharged into the menstrual flow.

Constitutional Significance of Amenorrhea and Its Treatment.—B. Aschner (*Wiener klinische Wochenschrift,* December 20 and 27, 1923) divides amenorrhea into three types: 1, The complete type; 2, the milder form of oligomenorrhea; and 3, opsomenorrhea, which is associated with a prolonged interval of menstruation. Amenorrhea occurs usually in five types of women: 1, in anemic and chlorotic women; 2, in plethoric women, who are benefitted by venesection; 3, in hypoplastic women (universal or partial); 4, in obese women; and 5, in women with hypertrichosis, even though it may be slight. The author favors the theory of the depurative function of menstruation and he even doubts whether climacteric disturbances are not caused by suppression of the menstruation rather than to cessation of the ovarian function. Obese women are occasionally cured of amenorrhea after a process of reduction of the obesity, but there are also cases in which the obesity disappears after the induction of regular menstruation by venesection and local treatment. He found that iron and arsenic might do more harm than good in plethoric women.

Aftereffects of the Late Toxemias of Pregnancy.—John W. Harris (*Bulletin of the Johns Hopkins Hospital,* April, 1924) examined 111 patients who had been suffering from any form of the late toxemias of pregnancy one year following delivery, in order to obtain information as to the ultimate outcome of such complications. The classification of the late toxemias was based on two criteria: the presence or absence of convulsions, and the presence or absence of renal involvement at the end of three weeks following the termination of pregnancy. The cases were divided into four groups: eclampsia, preeclamptic toxemia, nephritic toxemia, with convulsions, and nephritic toxemia without convulsions. The figures indicate that chronic nephritis is a sequel to be reckoned with in women who have had eclampsia, and also that one attack of eclampsia confers at least a relative immunity against its occurrence in subsequent pregnancies. In the patients with preeclamptic toxemia, only twenty-two were normal at the end of the year, and thirty-three showed signs of chronic renal involvement. While the incidence of chronic nephritis was unexpectedly high in both primiparæ and multiparæ, it was twice as great in the latter as in the former. In all the patients with nephritic toxemia, with and without convulsions, at the end of a year, evidences of chronic nephritis were present, this being more severe than when the patient left the hospital. In discussing these findings, it is stated that the length of time the toxemic symptoms have persisted seems to be a factor in determining the occurrence of permanent renal damage. The experience of the author seems to justify the conclusion that, when the signs and symptoms of the toxemia persist for three weeks or longer after delivery, the chances of escaping permanently damaged kidneys are minimal.

Experience with One Thousand Cases of Abortion.—D. S. Hillis (*Surgery, Gynecology and Obstetrics,* January, 1924) gives a tabulated report of the thousand cases and offers the following conclusions: 1. Conservative treatment of abortion in febrile cases gives better results than active therapy. 2. Febrile patients who have a five day afebrile period have a greater tendency to continue a normal temperature after curettage than those who are operated upon before the end of this period. 3. Afebrile patients with a five day observation period have a greater tendency to remain with a normal temperature than do those who are curetted before the end of this rest period. 4. Approximately 6.2 per cent. of patients must be emptied because of alarming hemorrhage. 5. A plan of procedure which embodies a conservative rest period of five days' normal temperature for febrile and afebrile patients and results in as low a mortality as quoted in this paper seems to be a rational method for the treatment of abortion.

Glycosuria of Pregnancy and the Socalled Renal Diabetes.—K. Motzfeldt (*Norsk Magazin for Laegevidenskaben,* September, 1922) reports the case of a woman, twenty-six years of age, who showed glycosuria without any other symptoms of diabetes during two succeeding pregnancies. The sugar excreted in the urine was not influenced by the intake of carbohydrates. The glycosuria disappeared six days after confinement. The frequency of glycosuria during pregnancy is given as four to fifty per cent. The second case, showing a complete recovery from a typical renal diabetes, is supposed to be unique in the literature. As to the genesis the possible rôle of the sympathetic nervous system is suggested by the author. The third case is considered as a condition halfway between renal and ordinary diabetes. The possible relation of the traumatic neurosis to the renal type of diabetes is discussed. The facts upon which the diagnosis of a renal diabetes is based—glycosuria with normal glycemia, little or no relation between carbohydrate intake and glycosuria, absence of diabetic symptoms—can be seen in early cases of ordinary diabetes. As to the pathogenesis of the renal type the author maintains that this may possibly be the same as true diabetes, only that the cases are not progressive, but come to rest at a comparatively early stage of the development.

Results with the Alexander-Adams Operation.—Andreas Kuncz (*Zentralblatt für Gynäkologie,* February 16, 1924) believes that the Alexander-Adams operation is one of the good operations with which the free retrodeviation of the uterus can be cured. The procedure does not take long and the round ligaments are easily found. If the latter are thinned out the thicker intraperitoneal portions should be used. It has cosmetic advantages as the scar is hidden by the pubic hair. It is the most ideal procedure for the physiological restoration of the position of the uterus. If the inguinal canal must be opened, the Bassini method of closure is indicated. The round ligaments should be fastened with silkworm gut. The important elements in this procedure are a good technic, careful incision, dull dissection, avoidance of injury to the bloodvessels and careful hemostasis. This operation is contraindicated in those cases in which the history and examination show the slightest traces of past inflammation in the vicinity of the uterus, in the adnexæ and in the parametrium, and also in obesity. It is very useful in those cases where the uterus can be easily brought into the position of anteflexion, where the pessary test shows the absence of adhesions and where the condition of the adnexæ and appendix do not require careful revision of the abdominal cavity.

Treatment and Prophylaxis of Eclampsia.—Friedrich Heinlein (*Zentralblatt für Gynäkologie,* February 16, 1924) maintains that the individualized and theoretically expectant treatment of eclampsia has many advantages over the purely active therapy: the former shows a maternal mortality of seven per cent. and an infantile mortality of thirteen per cent. as compared with those of the latter, namely 23.3 and twenty-two per cent. respectively. According to the conditions of the individual case, a purely expectant treatment

will suffice ,or later, especially in the interest of the child, a safe delivery will result; in rare cases accouchement forcé will be necessary in rare cases. Cæsarean section is not without danger in these cases. Whether a preliminary venesection several hours before the delivery will render a favorable prognosis in this operation remains to be determined in the future. If the eclampsia is associated with a narrow pelvis, which in itself does not require Cæsarean section, active treatment may be necessary (possibly with preliminary venesection), as a protracted conservative therapy aggravates the eclampsia. The upper limits of the indication with normal blood pressure are determined by the individual factors in the case. Exhausting physical exertion in the late months of pregnancy seem to favor the development of eclampsia.

Primary Repair of the Perineum During the Puerperium.—W. Rudolphson (*Zentralblatt für Gynäkologie,* February 16, 1924) recommends the use of the secondary suture of the perineum after failure of the primary suture for the following reasons: 1. It is always successful, prevents gynecological conditions and avoids later necessary operations. 2. The carrying out of this operation during the woman's first stay in the hospital makes it easier for the woman to make up her mind and spares her time and expense. 3. The contraindications, danger of infection and mishaps with their somatic and mental disadvantages are so rare that they may be neglected. The secondary perineal suture should be done as soon as the temperature is normal and the wound has become clean. According to the author's experiences it is immaterial whether the granulations are curetted off or left in place previous to the application of the suture.

Treatment of Febrile Abortion. — Kurt Laemmle (*Zentralblatt für Gynäkologie,* February 9, 1924) draws the following conclusions: 1. In uncomplicated cases (febrile or afebrile) without marked hemorrhage, the results as regards life and health are about the same with active and expectant treatment. The active treatment shortens the stay in bed, injures the general condition less, and returns the patient sooner to her duties or work. 2. In the presence of a demonstrable transuterine infection, the patient should be treated clinically as far as possible; in the presence of a serious hemorrhage and if the transportation of the patient is impossible, the uterus must be emptied as gently as possible, as the battle of the body against the invading infection is made more difficult by the additional hemorrhage and weakening. 3. The technic of the emptying of the uterus is immaterial, provided it is done gently and by an experienced physician.

Rapidity of Sedimentation of Erythrocytes in Abortion.—G. Frommolt (*Zentralblatt für Gynäkologie,* February 9, 1924) has found that the more marked the acceleration of the sedimentation of the red blood cells in an abortion, the more likely is the course of the abortion to be attended by fever, especially in cases of abortion during the first three months. Accordingly the sedimentation reaction of the erythrocytes is applicable in the determination of the question whether an abortion is infected or not, and it also deserves recognition in determining the indications for treatment.

Uterus Didelphys.—F. C. Newton (*Annals of Surgery,* January, 1924) presents the following summary of his findings on this disease. Four cases of uterus didelphys are reported. This condition, one of the rarer uterine anomalies, is the result of a failure of fusion between the two Müllerian ducts. It is usually unrecognized until pregnancy occurs and is no bar to the successful termination of the latter.

Hemolytic Streptococci in Pregnancy.—A. E. Kanter and I. Pilot (*Surgery, Gynecology and Obstetrics,* January, 1924) give a tabulated report of their bacteriological findings in the vaginal secretions of ninety-six pregnant women, and summarize their findings as follows: The normal vagina rarely contains virulent hemolytic streptococci and there is no evidence that the presence of such streptococci plays any part in the production of puerperal sepsis. 2. Any manipulation of the vagina, either for examination or operative procedure, increases the possibility of puerperal sepsis. 3. Puerperal hemolytic streptococcic infection is regarded in most instances as evidence of exogenous infection. 4. Droplet infection from attendants is possible and the use of gauze masks during delivery and the exclusion of those having sore throat from the delivery room and from attendance on puerperal women is clearly indicated.

Diagnostic Applicability of Phloridzin Glycosuria in Pregnancy.—E. Klaften (*Zentralblatt für Gynäkologie,* April 26, 1924) states that if glycosuria does not appear after the use of a relatively large amount of two milligrams of phloridzin, pregnancy can be excluded with great likelihood, but if one milligram produces a glycosuria the existence of pregnancy must be accepted as very likely. Only twenty-seven per cent. of the cases of early pregnancy are so slightly hypersensitive as to show glycosuria after the use of one milligram and two milligrams appear to be such a large dose as frequently to give a positive result in nonpregnant women. Therefore only the glycosuria that follows a dose of one milligram should be considered as one that indicates a hypersensibility characteristic of the pregnant woman.

Treatment of the Hydrops of Pregnancy.—J. Wieloch (*Zentralblatt für Gynäkologie,* April 26, 1924) was enabled to accomplish a reduction in weight, for a duration of five to eight days, in about half of his cases of hydrops of pregnancy with the use of intramuscular injections of five c. c. of gelatin (five to twenty grams of gum arabic and one hundred c. c. of Ringer's solution, filtered and sterilized). This loss of weight occurred without any other form of therapy and without any change in the mode of living. In some cases it amounted to several kilograms. In two or three cases the increase in blood pressure was brought to a standstill or lowered. The author, therefore, favors the use of the gelatin or gum-Ringer treatment in the therapy of hydrops gravidarum and in the prophylaxis of eclampsia.

Routine Treatment of Asphyxia of the Child During Delivery with Chloroform Anesthesia.—E. Frey (*Zentralblatt für Gynäkologie,* May 3, 1924) found that chloroform anesthesia is not dangerous, but often affords protection to the child against asphyxia by protecting the period of its expulsion and diminishing an excessive pressure. Therefore the anesthesia is indicated in case the fetal heart beats continue to number less than one hundred. If the mother presents the necessary conditions, spontaneous delivery will result in about fifty per cent. of the cases and the use of forceps will not be necessary. If it does not set in within ten to fifteen minutes, there will be plenty of time to complete the delivery under conditions of careful disinfection, in contrast to the otherwise frequent need of haste.

Intrauterine Death of Fetus Carried Past Term.—A. Mayer (*Zentralblatt für Gynäkologie,* January 12, 1924) maintains that the cause of death in fetuses carried past term is most probably to be found in disturbances of metabolism and those of internal secretion. It appears that the abnormally long duration of pregnancy and the intrauterine death of the fetus are preeminently associated with the male sex. This might possibly be attributed to the fact that in the presence of a male fetus greater demands are made upon the metabolic processes of the mother than in the presence of a female fetus. From the viewpoint of internal secretion, special attention should be given to the thyroid gland, the hypophysis, and adrenals in these cases.

Inflation of the Fallopian Tubes.—Hugo Sellheim (*Zentralblatt für Gynäkologie,* March 15, 1924) emphasizes the value of intrauterine, nonoperative inflation of the fallopian tubes to determine their patency. Occasionally, however, it is followed by unfavorable results, such as air embolism. Such dangers may be obviated by the use of a well lubricated catheter without injuring or dilating maneuvres, by avoiding injury of the genitals, by avoiding the test during menstruation, and by continuous auscultation for the intraabdominal escape of air and by ceasing the insufflation as soon as the blowing sound is heard. This test should not be used on the slightest suspicion of infection. The author also calls attention to the value of the sensation felt by the hand controlling the instrument. With these precautions the test is comparatively safe.

Dilatation of Cervical Canal by Artificial Relaxation of Muscle.—Ernest Moser (*Zentralblatt für Gynäkologie,* March 15, 1924) found that he was enabled to dilate the cervical canal by injecting sixty c.c. of a two tenths per cent. solution of eucaine in normal saline solution on each side of the cervix, and then slightly above it. Almost immediate dilatation of the cervic resulted. With this technic he curetted fifty cases without anesthesia, with very little hemorrhage, but with severe pain which lasted for hours. Therefore, it is not applicable to ambulant cases. A perforating rupture of the cervix occurred once.

ANESTHESIA

Anesthesia in Intracranial Surgery. — Z. Mennell (*American Journal of Surgery,* April, 1924) says that from a wide experience of over four hundred brain tumor cases he unhesitatingly chooses ether at the present time as the best anesthetic for employment in cerebral surgery, and ether given by the intratracheal method in the vast majority. He lays claim to nothing original for the intratracheal apparatus he uses. The machine is easily portable, and the motor will run on any constant alternating current from eighty to two hundred and forty volts. It has run for eighteen hours on end without getting hot. He uses a two way stopcock when giving ether and oxygen. There is no need to warm the vapor, as the tubes are long, and the temperature of the vapor is that of the theater by the time it reaches the patient. One of the main objects to be aimed at, he says, is that of giving a constant dose, and in these cases especially, the minimal dose which is compatible with efficiency. Any change in the strength of the vapor must be extremely gradual. A free air way, a plentiful supply of oxygen, and a very close cooperation between the surgeon and anesthetist are essential.

Regional Anesthesia in Gynecology.—W. R. Meeker and B. E. Bonar (*Surgery, Gynecology and Obstetrics,* December, 1923) present a comprehensive study of local anesthesia, discussing various methods, sacral nerve block, parasacral nerve block, injections into the perineum, etc. They report on a series of obstetrical cases and sum up their findings as follows.

The preliminary administration of pantopon and scopolamine in proper amount contributes in establishing favorable conditions, but the stage of twilight sleep should not be reached.

The more supérficial operations on the vulva, perineum, and anus may be quite satisfactorily performed under terminal infiltration. Such operations include the removal of cysts and solid benign tumors of the labia majora and minora, superficial fistulæ, perineorrhaphy, surgery of the terminal rectum, and the removal of cervical polypi.

The foregoing operations may be painlessly performed in by far the greater number of cases by block of the sacral nerves by injection of an anesthetic medium into the sacral canal, called epidural, sacral, extradural, and caudal anesthesia. If one who uses this method is willing to supplement the failures by local infiltration, it does not work so much of a hardship. The height of anesthesia by this method is variable, although in a majority of cases anesthesia of the entire pelvic floor and viscera is produced. Its chief use, in addition to the more superficial operations on the external genitalia, perineum, and terminal rectum, is in dilatation and curettage and urological manipulative work.

For the deeper operations on the pelvic floor and viscera the local anesthetic procedure of choice is the association of a low epidural injection with transsacral block of the upper four sacral nerves. This procedure gives a uniformly satisfactory anesthesia in surgery of the pelvic floor and viscera by the perineal route. It has been found sufficient for posterior resections of the carcinomatous rectum, both the single and second stage resections, the posterior wall of the vagina often being removed with the growth. Excision of multiple perineal fistulæ and malignant growths of the vulva and vagina, perineorrphaphy, anterior colporrhaphy, repair of vesicovaginal and rectovaginal fistulæ vaginectomy, amputation of the cervix, the Watkins interposition operation, vaginal hysterectomy, and excision of the carcinomatous urethra, have been painlessly performed under this anesthesia. Resection of the bladder may be painlessly performed when field block is added for the suprapubic incision.

The borderline of usefulness of the transsacral method is seen in the posterior resection of a high lying carcinoma of the rectum, or rectosigmoid, the Watkins interposition operation, and the Mayo vaginal hysterectomy. Here the traction necessary in delivering the viscus into the operative field is often transmitted outside of the anesthetized area and produces pain. This traction pain cannot be controlled by paravertebral nerve block, but, when it is necessary, a short primary ether narcosis, or nitrous oxide oxygen analgesia should be administered at this point.

Parametric injections do not efficiently control the traction pain of surgical manipulation in vaginal hysterectomy, and anesthesia of the vagina, also, is usually necessary.

Local anesthesia in pelvic operations by the abdominal route is sufficient for the laparotomy, but general narcosis is usually necessary for the pelvic work. For most surgeons of wide experience, local anesthesia, by whatever method induced, does not create an operative condition compatible with the employment of the surgical methods indicated by most pathological conditions of the pelvis.

In obstetrics the epidural method is more practical than the transsacral, although block of the lower four sacral nerves by the latter technic, with the aid of a low epidural injection, gives satisfactory anesthesia. A great advantage of the method is the relaxation of the pelvic floor, which is more complete than with any other anesthesia.

The forceps operation, version and extraction, manual dilatation of the cervix, rotation and repair of cervical and perineal tears may all be painlessly performed by epidural anesthesia, which may also be used in the removal of uterine contents in incomplete abortions, packing of the uterus, and in insertion of the colpeurynter.

The pains of normal labor may be controlled by this method, although the abolition of the pain reflex also takes away the voluntary effort of bearing down. Uterine contractions continue, however, so that if the parturient is instructed when and how to bear down, completion of labor occurs painlessly.

The feature of greatest difficulty is in the selection of the proper time to induce anesthesia. Most cases could be made to terminate painlessly if the anesthesia could be administered an hour to an hour and a half before delivery. In our experience, the maximal value of the anesthesia results when not given until the os has reached at least seven centimetres dilatation in primiparæ and at least four centimetres in multiparæ for average cases.

The field of usefulness in spontaneous delivery will greatly increase when a means has been devised to prolong the action of an epidural injection. Further investigation is necessary on this subject. It is possible that the drugs are already at hand, the proper combination and use of which will anesthetize the entire pelvic floor and viscera for five or six hours without repetition. Such an anesthetic should prove a great blessing in obstetrics and become the anesthetic of choice in normal delivery.

Anesthesia in Bad Operative Risks.—E. A. Tyler (*American Journal of Surgery,* April, 1924) gives the following anesthesia treatment for cases of damaged myocardium and hyperthyroidism:

One of the most frequent complicating factors for a successful operation is a damaged myocardium. Reeently we have been able, by the proper use of digitalis tincture, over a period of a few days to a month, to prepare a seriously damaged heart muscle so that it has successfully withstood one, and frequently two to three operations. It has been our custom to start the patient on ten minims of the fat free tincture of digitalis three times a day. We rarely go above this dose, but prefer rather to spread the dose over a longer period of preparation. This is given until we are able to slow the heart rate down to ninety at least, or preferably eighty, if that can be accomplished. It has been our observation that the blood pressure ratio does not seem to improve materially under this treatment, so that we have had to ignore this guide in determining the time for operation. Besides the pulse rate we have been able to use the electrocardiograph in some few cases to determine when digitalis saturation has been reached.

This treatment is of special value in patients suffering from hyperthyroidism, who, as is well known, often exhibit concomitant damaged myocardia. We have also found digitalis of real value in at least seventy-five per cent. of the patients presenting themselves for prostatectomy.

Another of our sheet anchors in the bad operative risks is morphine. This drug has a very salutary effect in patients with weak hearts, because it lessens the drive of fear on an already overworked heart. We give one or more doses of morphine plain, or morphine and scopolamine, or morphine and atropine, so that the patient is somewhat "dopy," thus alleviating fear. This has enabled us often to take a nervous patient to the operating room with a pulse rate of seventy-two to eighty-four, and frequently not have the pulse rate exceed this throughout the operation. In cases of hyperthyroidism; we believe it to be criminal to operate without morphine. These patients can tolerate large doses of morphine on account of their high metabolic rate; the morphine also helps to decrease the metabolism.

Intravenous Anesthesia. — A. Lehrnbecher (*American Journal of Surgery,* January, 1924) reports on nine hundred cases of intravenous anesthesia, and cites two special indications for its use as follows: 1. In operations in the region of the head and neck it is very convenient, as the operator and anesthetist are separated from each other and are not hindering each other. Complete asepsis is certainly less endangered by this method. 2. Intravenous anesthesia has a very beneficial effect in all cases, in which infusion of saline is indicated. In such patients it is the method of choice, not equalled by any other. When an operation has to be done on persons who are in a state of deep shock, or who have lost much blood, the patients leave the table in a far better condition than before, thanks to the infusion. It is of extreme value in cases of ectopic pregnancy with intra-abdominal hemorrhage. Here the reinfusion of the lost blood may be combined with the infusion of Ringer solution. In cases of advanced peritonitis the infusion prevents the further fall of the blood pressure.

He concludes that further experience will show whether it is possible to improve the method. Pharmacological research work may perhaps succeed in finding a drug which has no damaging effect on the heart and on other organs. Then we shall have a really ideal method. The width of choice may be very great, as only sufficient solubility is necessary, and as no volatility, as for inhalation anesthesia, is required. Burckhardt experimented with quite a number of drugs. It seems likely that the method of intravenous anesthesia will be of great interest in America especially, where knowledge and the research in the field of anesthesia are so highly developed. It may become a routine method for those who specialize in the administration of anesthetics.

Spinal Anesthesia.—A. G. Rytina and H. L. Tolson (*Annals of Surgery,* February, 1924) say that in their experience with 387 cases in which operation was performed under spinal anesthesia, they noted the following advantages of the method:

The anesthetic is quickly and, in most cases, readily induced. Operative shock is avoided by the blocking of the nerve supply of the operating field. Hemorrhage is less than with inhalation anesthesia. Perfect muscular relaxation is a decided advantage in abdominal surgery. A smaller incision may be made and less traction is necessary than with inhalation or local anesthesia. Contraction of the intestines allows ready inspection of the abdominal viscera and very little packing off is required. The time allowed by spinal anesthesia is conducive to more careful work. No injury to the kidneys occurs with spinal anesthesia. The heart is disturbed less than with inhalation anesthesia. Gastric disturbances occur in only a small percentage of cases and are then slight and transitory. Liquids may be administered by mouth during and immediately after operation. Nourishment may be given just after the disappearance of the analgesia effect. Convalescence is shortened and there are few postoperative complications attributable to the anesthetic. No lasting postoperative effects due to the anesthetic have occurred in our cases. Spinal anesthesia is a safe method as regards danger to life. In brief, spinal anesthesia is a method which permits the performance of operative procedures without disturbing the equilibrium of the patient.

Pure Nitrous Oxide Oxygen Anesthesia.—E. I. McKesson (*American Journal of Surgery,* April, 1924) asserts that nitrous oxide oxygen anesthesia possesses many properties, which particularly adapt it to the field of oral and sinus surgery, and although it has not yet reached the place in rhinology that belongs to it, the fault has not been in its adaptability, but in a lack of knowledge of the mode of administration and its advantages for this work. Anesthesia, for all sinus surgery, whether done through the nose or mouth, is performed under the same general principle of pressure administration. There are only two contraindications to the use of gas oxygen, first, the want of an apparatus capable of meeting the physiological, the operative, and the mechanical requirements, and second, a lack of knowledge on the part of the operator and anesthetist. The author believes that no one has shown that gas oxygen directly or indirectly retards the healing processes after an operation, and upon the basis pointed out in another paper, it is reasonable to conclude that structural changes in any tissue may not result from its use. In this respect, it differs from other anesthetics, local as well as general, and this characteristic, together with other properties, makes it preferable for any operation requiring an anesthetic.

There must be the mechanical equipment for maintaining an adequate pressure of the gases at the inhaler with an enormous range of gas delivery to maintain this pressure, under the variable conditions of the respirations and the respiratory passages, if we are to be able to anesthetize all types of cases for oral surgery. A patient, who is not sufficiently narcotized by the usual induction or primary saturation, may relax if merely given more time in which to become saturated, but many of these cases require a more definite procedure—they require secondary saturation and because of their frequent tendency to large, quick inspirations, more than the usual care is needed to exclude air from the air passages, by administering the gases at a higher pressure than usual.

Secondary saturation consists of two procedures: 1, administering pure nitrous oxide until sign of approaching fourth stage anesthesia develop; 2, in following at the next inhalation with one or two breaths of from twenty to one hundred per cent. oxygen to correct the anoxemia, then continuing by the administration of such a mixture of nitrous oxide oxygen as will maintain narcosis, without well developed signs of anoxemia. Of course, this presupposes instant and absolute control of the two gases, mechanically.

Paravertebral Anesthesia in Kidney Surgery.—G. Kolischer (*Surgery, Gynecology and Obstetrics,* June, 1924) believes that paravertebral nerve block, conducted by a proper technic, furnishes in practically every instance a satisfactory anesthesia. There is no mortality produced by a paravertebral anesthesia. It is applicable in all renal and ureteral surgery executed through the retroperitoneal route. The method which he described has been almost universally satisfactorily employed by him and other American surgeons in about seven hundred cases, with four failures only, and these, without any prejudice, may be ascribed to the extreme neurotic condition of the patients.

Paravertebral anesthesia is particularly indicated in renal surgery when the patient to be operated upon is suffering from pulmonary, circulatory, or bilateral renal disorders. It is contraindicated in infants and when it is necessary to perform the operation through the transperitoneal route. The disagreeable and dangerous aftereffects of general anesthesia as shock, nausea, vomiting, aspiration pneumonia, and anuria acidosis, and those of spinal anesthesia, as malaise, temporary paralysis or even *exitus letalis,* are done away with in paravertebral anesthesia. The technic is simple and easily acquired and mastered.

Ethylene Anesthesia.—W. E. Brown (*American Journal of Surgery,* January, 1924) records the results from his report on several cases. The descriptions of all these subjects, several of whom were entirely ignorant of the gases used, agreed that while nitrous oxide oxygen alone produced pounding or whirling sensations with a definite period of dizziness subsequent to removal of the anesthetic, and that the sensations were somewhat unpleasant, nitrous oxide and ethylene were distinctly more pleasant. There was a general feeling of numbness, little pounding or fullness in the head, a more marked feeling of "fading away" and less subsequent dizziness. Pain sensations were also much more definitely dulled or in some cases absent. There seems no doubt that a much greater percentage of oxygen can be used. We have found our inductions to run at about ninety and maintenance eighty-five to eighty per cent. ethylene. There is no cyanosis and good relaxation. There is often some slight nausea following the anesthetic, but it is not prolonged. There seems to be no irritation to the lungs or kidneys, and these facts together with the fact that C_2H_4 can be purchased for about one third the cost of N_2O seems to point to its early adoption as a routine anesthetic.

Sacral Anesthesia.—E. C. Brenner (*Annals of Surgery,* January, 1924) offers the following conclusions: Sacral anesthesia, if properly administered, is a safe procedure and should not be confounded with spinal anesthesia. The motor nerves are not affected and the three lower sacral sensory nerves are those chiefly anesthetized by conduction. With proper technic successful anesthesia will result in the majority of cases. Failures grow less as one becomes more experienced. It would seem that sacral anesthesia is deserving of more general application in rectal, genitourinary and perineal surgery. One should be familiar with the technic of transsacral conduction in case of failure of the caudal bloc.

MEDICAL JOURNAL AND RECORD
A National Review of Medicine and Surgery
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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, NOVEMBER 19, 1924

Medicolegal Notes.

INJURY AGGRAVATING TUBERCULOUS DISEASE COMPENSABLE

The Kentucky Court of Appeals holds that the provision in the State Workmen's Compensation Act that personal injury by accident shall not include "the results of a preexisting disease" does not exclude from compensation the results of the accident. It merely excludes the results of the preexisting disease. The results are the ordinary and natural consequences of the disease itself, and do not include those consequences which would not have followed if there had been no accidents. The applicant, though afflicted with tuberculosis of the spine, had been in the employer's employ for about five years, and had worked practically every day until the time of the accident. From that time on his condition grew worse, and at the end of six months he was totally disabled. The Workmen's Compensation Board found upon substantial evidence that his disease had lain dormant until the accident, and that the accident "lighted it up." Doubtless in time the disease would have wholly incapacitated the applicant for work; but if, before that time arrived, the disease was aggravated or accelerated by the accident, and he was thereby disabled sooner or to a greater extent than he would have been had it not been for the accident, there was an additional injury that was not the result of the disease but of the accident, and such injury was held to be compensable to the extent of the disability due to the accident. The Legislature did not intend to discriminate between employees who were well and those who were suffering from a preexisting disease, but merely that the employer should not bear the burden of the results that would have followed from the preexisting disease if no accident had occurred.—Robinson-Pettet Co. v. Workmen's Compensation Board (Ky.), 258 S. W. 318.

PLAINTIFF TO SHOW WANT OF CARE, SKILL, OR DILIGENCE

The Georgia Court of Appeals holds, Martin v. Greer, 121 S. E. 688, that a person professing to practice surgery or the administering of medicine for a compensation must bring to the exercise of his profession a reasonable degree of care and skill (Ga. Civil Code, 1910, §4427). In a suit for damages alleged to have been caused by the malpractice of a surgeon, the burden is on the plaintiff to show a want of due care, skill or diligence, and also that the injury resulted from the want of such care, skill or diligence.

Where the petition in such a suit failed to show any negligent exercise or failure to exercise any professional act or duty owed by the defendant as a surgeon in sending the plaintiff to the city hospital; or any negligence chargeable to the defendant in the performance there by others of the operation in setting a broken leg; or in any subsequent treatment by the defendant, it was held the trial court did not err in sustaining a general demurrer to the petition.

Under the rule that it is improper to plead evidential facts, it was held that the inclusion in a petition, or the attachment thereto as an exhibit, of an x ray photograph, designed to show the condition of an injured member from the alleged malpractice, is subject to special demurrer. The court followed Pace v. Cochran, 144 Ga. 261, where the photograph "of the present condition" of a broken arm alleged to have been negligently set was held improperly attached to the petition.

ACT AUTHORIZING ISSUE OF TOWNSHIP BONDS FOR ERECTION OF HOSPITAL HELD CONSTITUTIONAL

The South Carolina Supreme Court holds, Battle v. Willcox, 122 S. E. 516, that the Act of March 26, 1923, authorizing the board of commissioners of Marion county to issue and sell bonds to purchase a site and erect and equip a hospital in Reaves township is valid and constitutional as against the following contentions: 1. That the act was in contravention of section 5 of article 10 of the State Constitution of 1895, in that the bonds were not sought to be issued for a corporate purpose. Since the corporate purpose of a township is primarily to perform such governmental functions as may be committed to it by the General Assembly, in delegating to Reaves township the power to erect and maintain a public hospital the General Assembly conferred a power which was for a corporate purpose within the meaning of the section of the Constitution. 2. That the act was in contravention of section 6, article 10, of the Constitution, in that the hospital building was not such a "public building" as is contemplated by that section. 3. That the act was in contravention of subd. 3, section 34 of article 3 of the Constitution in that it was an attempt to incorporate and create a hospital by special law. Two judges dissented on the ground that the act provided that the commissioners might lease the hospital to other parties, so that it might at once be converted into a private hospital, and entirely free from the management of the public officials.

COMPENSATION FOR PERMANENT DISABILITY FOR INJURY TO EYE

The California courts hold, Globe Cotton Oil Mills v. Industrial Accident Commission, (Cal. App.), 221 Pac. 658, that where for an injury causing the necessary removal of the lens of a workman's eye, in which condition he had but 1/100 vision, owing to the fact that he had previously entirely lost the sight in his remaining eye, the Commission determined the percentage of permanent disability was 19¼ per cent., such award was within the Commission's discretion, although with the aid of properly prepared and adjusted glasses applicant's sight was restored to practically normal vision. This is a matter on which experts of equal experience may differ greatly in their conclusions.

EVIDENCE AS TO TREATMENT OF SIMILAR CASES HELD INADMISSIBLE

In an action for damages for injuries suffered in a treatment for cancer of the eyelid by one not licensed to practice medicine, the Oklahoma Supreme Court holds, Ragan v. Shannon, 225 Pac. 672, that it was error to admit testimony of witnesses that they at one time had cancer and that defendant had cured them, there being no connection between this evidence and the diagnosis and treatment of the red spot on plaintiff's eyelid, and, the witnesses being all non-experts, their evidence was purely opinionative as to whether they had cancer.

PHYSICIAN MAY TESTIFY AS TO CONSENSUS OF MEDICAL OPINION AS TO THE THERAPEUTIC VALUE OF DRUGS.

In a libel for misbranding packages of pills, in violation of section 8 of the Federal Food or Drug Act, in regard to the curative properties of the pills, the Circuit Court of Appeals, District of Columbia, holds, United States v. Chichester Chemical Co., 298 Fed. 829, that a medical witness may testify as to the consensus of medical opinion, if any there was, in respect to the therapeutic properties of the ingredients of the pills. This rule, the court said, doubtless rests in part upon the view that Congress did not intend by the act to condemn honest differences of opinion between different medical schools relative to the therapeutic value of drugs in the practice of medicine.

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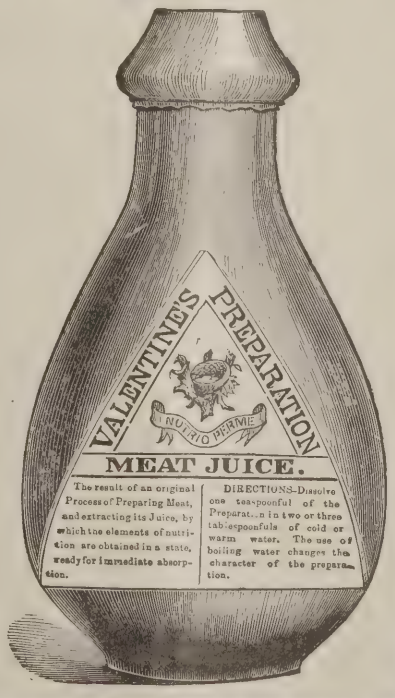
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Miscellany.

Fads in Health Legislation.—Dr. Morris Fishbein (*American Mercury*, September, 1924) opens his article with a story of a group of physicians returning in a pullman from a medical convention. So deeply were they engrossed in conversation, that the porter waiting with his clothes brush began to fear that he would not have time before the destination was reached to perform his perfunctory duties and collect his tips. So approaching one of the group, he enquired, "Bresh you off, sah?" "No indeed," replied the doctor, "I don't want to fill all this air with bacteria." "Don't be afraid, sah," was the response. "The kind of brushin' I do ain' gwine disturb no bacteria none." With this as a text, Dr. Fishbein goes on to tell us that much of our health legislation is as ineffective as the porter's brush, and quotes examples.

In 1832, at the time the cholera epidemic occurred, the Board of Health at Washington passed a law cutting off entirely the supply of fresh vegetables except potatoes, beets, tomatoes and onions, and cast discredit on these. They then recommended that all theatrical performances and other exhibitions be suspended; then, most astonishingly, passed resolutions that quarantine regulations interdicting the commercial intercourse of the country were wholly ineffectual in preventing the introduction and spread of Asiatic cholera, etc., etc., so it was earnestly desired that no more prohibitory regulations be enacted upon this subject.

In 1916 the State of Colorado passed a law regarding the hygiene of food manufacture and distribution, in which was a clause providing for cuspidors whenever and wherever needed, with directions, albeit, for daily cleansing. "What indeed," comments Dr. Fishbein, "is the presence of the spittoon but a psychological encouragement to spitting?" After quoting a few more rather meaningless regulations about barber shops in Colorado, the writer quotes a soda fountain law in Alabama that "no patron or customer shall be supplied with a spoon . . . except it has been sterilized since last used, or has never been used." Arizona has a law which states that the "midwife must endeavor to secure the assistance of a physician if the child is not born after twenty-four hours of labor." "Why not twelve or eighteen? And if twenty-four is safe, why not thirty-six?" asks the author. Florida forbids the provision of a brush and comb in pullmans, compelling the passenger to tip the porter to produce a bootleg comb from the receptacle in which he has conveniently concealed it. It also requires the cleaning of telephone earpieces and mouthpieces at least once a week, although there is not the slightest scientific evidence that disease has ever been transmitted by these appliances.

Illinois and the State of Washington have passed some very remarkable influenza prevention laws, including the wearing of gauze masks in public during epidemics in the latter State. Dakota has a hotel inspection act that covers almost every sanitary contingent. Texas requires that every hotel must provide sheets long enough to tuck two feet under the mattress at both head and foot of the bed.

After some biting comments on the foolishness, backwardness and laxness of some of our birth registration laws, Dr. Fishbein closes his discussion with the lack of uniformity and discordance of our State laws regulating the practice of medicine. He quotes Connecticut's law entitled *Concerning the Practice of Naturopathy*, adding that it inflicts on the people of the State "all the fantastic forms of assault upon the exterior of the ailing human that have been devised by the paranoiac brains of a hundred cultist prophets . . . most other States, perhaps a little more wary, provide only for the groups with effective lobbies." Physicians who have watched for years the progress of venereal disease legislation, have come to the conclusion that the problem is not a legal but an educational and medical one. "The only value of much of the legislation so far enacted lies in its dissemination of educational matter."

Nebraska, Wisconsin, and many other States have laws forbidding physicians to split fees, and a strong organization of surgeons requires each of its members to take an oath that he will not do so. "But only an elementary knowledge of human nature is required to make it plain that the man who wants to split fees will not hesitate to violate a law that is easier to flout than the Volstead Act, or to break an oath of the nature of that required by the surgical organization."

The article closes with a discussion of the Shepherd-Towner Act passed by Congress to provide for the "public protection of maternity and infancy," and its use, in the writer's opinion, by politicians to capture the women's vote, and for other political ends.

Many—perhaps even some physicians—will disagree with some of Dr. Fishbein's deductions, but he is right in the main, and the material that he presents for our perusal is at least controversial and most interesting.

Feats of Memory.—Some remarkable stories are told of the prodigious feats of memory of the late John Henry Blackburne, says the *Medical Press*, October 15, 1924. It has to be remembered that the blindfold player, from start to finish, neither sees the chessboard nor takes any notes of the game. On one occasion, while playing eight opponents blindfold, Blackburne on ascertaining his opponent's move, immediately and correctly called "mate in four," a feat of which an average player playing a single game over the board might well be proud—yet Blackburne was able to accomplish it while playing against eight invisible opponents!

On another occasion, when engaging ten such opponents, he called a move which, as the pieces stood, was impossible. When told of this he gave the position of every piece on the board, but this did not tally with the actual position. Thereupon he cited each one of some forty moves that had been made on the board and the record of the game proved him to be correct, and that his opponent had not moved his pieces correctly. This showed that the great player must have retained a perfect memory of some hundreds of moves in the course of the ten games.

Even more astounding feats of memory have been recorded. One player is said to have played blindfold twenty games of chess, four games of draughts, while indulging in an ordinary game of whist!

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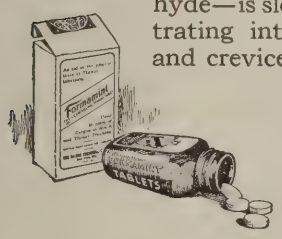

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Correspondence Course in Public Health Nursing.—The third annual correspondence course in public health nursing given by the University and Bellevue Hospital Medical College in cooperation with the New York State Department of Health is now open for enrollment of students. The syllabus of the course has been entirely reorganized. "Practical Objectives in Health Work During the Next Twenty Years," as outlined by the late Dr. Hermann M. Biggs in his last public address, is the theme running through the entire course of approximately thirty lessons of ten hours each. The various considerations which must not only receive the attention of public health officials and lay workers, but in which the support and cooperation of the public at large must be secured, are taken up in the lessons in connection with the objective under discussion. The intent has been to enable the nurse, through these lessons, to see more clearly the adaptation which she will need to make in her work in order that she may seize the opportunities open to her to aid in attaining these objectives. A residence week of study at some one of the larger medical centres of the State is required during the course.

"One serious handicap"—quoting Dr. Biggs—"to the accomplishment of these ends in the future, in my judgment, will be the lack of a sufficient number of well trained and qualified physicians and public health workers, and their proper distribution." The qualifications of public health nurses in this State (outside of New York City) "appointed after January 1, 1925, by public health authorities," as established by the Public Health Council of the State require that, in addition to being (1) "not less than twenty-one years of age at the time of their appointment" and (2) being "registered nurses," they (3) "shall have completed a course in public health nursing approved by the Public Health Council." The correspondence course announced above is one of those approved by the Council.

Industrial Psychology.—A four hour day in industry would be possible if workers were placed in work for which they are best fitted, was concluded by Dr. Donald A. Laird, of Colgate University, in an address on industrial psychology before the New York City Chapter of the National Association of Cost Accountants on November 11th.

The differences in human abilities are amazing, Dr. Laird said, one coal miner loading twelve times as much coal as another, while it is not rare for one salesman to sell three hundred and fifty times as much goods as another. In every occupation there are usually many workers with twice the abilities of others. Practice and training, Dr. Laird showed, increase these differences rather than lessen them. They are not caused by unequal opportunities but in most instances by the workers' inheritance. A worker may have low ability for one type of work but high ability for another, just as Patrick Henry was a fiery orator but could not write an intelligible report. Every plant should be combed for employees with low ability and those found transferred to work for which they have more ability. In one printing plant this was done and as a result the force was reduced from nine hundred to five hundred. This was accomplished by filling vacancies caused by death and quitting by transferring low producers into work for which they were better fitted.

Psychological tests are available to measure many different abilities and other tests are being developed so it will soon be possible to know accurately what work each should be in. When this is accomplished Dr. Laird stated that hours of labor could be greatly reduced, costs of manufacture and living would be lowered, and many labor problems would be practically annihilated. Nation wide cooperation among American industries will bring this about.

A Mental Prophylaxis Clinic in Paris.—An interesting clinic has been established in Paris by the *Ligue d'Hygiène Mentale* under the care of a well known psychiatrist, Dr. Toulouse. Although originally founded nearly three years ago, the clinic may be said to be still in the experimental stage, for it is constantly developing along new lines and exploring fresh fields for its work in preventing, where possible, mental disease.

The clinic consists, in the first place, of an outpatient department to which patients may come without any formality and where they receive advice gratuitously concerning early symptoms of mental breakdown, such as excessive lassitude, peculiarities and dislikes, delusions and obsessions of all varieties. Although the building in which the clinic is housed is situated in the grounds of an asylum, the patients enter by a separate door and Dr. Toulouse considers that there are advantages to be gained by such an arrangement. The patients receive a complete physical as well as psychical examination; special departments exist to deal with disorders of the eye, the ear, nose and throat, and other organs, and a well equipped laboratory enables the psychiatrist to obtain the aid of all modern diagnostic methods.

In addition to the outpatient department there are wards of two categories. The first, socalled free wards, are for patients with slight nervous symptoms. In connection with these are brightly decorated dining and sitting rooms, and the patients coming from working class homes find themselves in a pleasantly changed environment.

The other class of wards are closed in the sense that there is a certain amount of restraint. Patients who are not definitely insane can nevertheless be closely watched and observed. Should definite symptoms of insanity supervene, the patients can be transferred to an asylum, but a preliminary period of observation, such as is provided by these wards, saves a certain number of persons from the unjustifiable but nevertheless existant stigma of detention in an asylum.

A followup service is being developed and projects are on foot for establishing a system analogous to the Grancher system for tuberculosis, to deal with children who are growing up in a bad mental environment.

Such a service of mental prophylaxis marks a great advance in dealing with mental disease, and it is hoped that similar services will be established in other parts of the world, for only in this way can an effective front be presented to the ever increasing tide of mental breakdown.—(*The World's Health*, October, 1924.)

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Disasters and the American Red Cross.—Statistics compiled by the American Red Cross show that this has been a record breaking year for disasters. In a recent bulletin from Washington we are told that the first half of 1924 shows a record of more disasters drawing upon the relief resources of the American Red Cross than in any similar period in its history. Assistance from Red Cross funds to the victims has been extended in nôt less than thirty-five localities. Floods, tornadoes, explosions, fires and epidemics in the United States and earthquakes in foreign lands called for $200,000 direct from the national Red Cross treasury, while Red Cross Chapters and individuals contributed to relief work much more than that amount.

In addition to these major operations there were numerous smaller disasters for which relief was given by the local Red Cross Chapter without assistance from National Headquarters. The Red Cross is still carrying out an extensive work of relief and reconstruction among the victims of the Lorain, Ohio, tornado of June 28, where the sum of nearly $500,000 has already been raised and more is in sight for the reestablishment of the stricken territory and its people. Forty trained Red Cross workers are covering the entire tornado area and attending to every emergency need of the people who survived.

The disaster in Ohio caused the most widespread destruction of any listed by the Red Cross this year, although other calamities of the half year have recorded greater death lists. Relief activities of the Red Cross were almost wholly confined to the United States, except for earthquakes in Ecuador, Costa Rica and Colombia, and relief of famine sufferers in Albania.

The list of disasters from January 1 to June 30, 1924, where human suffering was relieved by the Red Cross, is as follows:

Tornadoes: South Carolina, Chatham country, N. C.; Martin county, N. C.; Harris county, Ga.; Meriwether county, Ga.; Tunica, Miss.; Eastern Oklahoma, and Lorain, Ohio; Shawnee, Okla.; Mississippi; Marion county, Ala.; Cascade county, Mont.

Cloudburst: Carter country, Tenn.

Windstorms: Dickinson, N. D., and sections of South Dakota, also in Minnesota.

Floods: Crosby, Minn. (mine); Cumberland, Md.; Belle Fouche, S. D.; Bitter Creek, Wyo.; Harpers Ferry, W. Va.

Explosions: Pekin, Ill. (starch works); Johnson City, Ill.; Welch, W. Va. (mine); Benwood, W. Va. (mine).

Fires: Lindonville, Vt.; Montpelier, Vt.; Kalama, Wash.

The Red Cross also extended assistance in funds and trained workers at a serious typhoid epidemic in Lincoln Memorial University, Tenn., and during the Arizona quarantine against foot and mouth disease. The North Carolina and Ohio tornadoes called out the new Mobile Disaster Relief Unit recently organized by the American Red Cross, which responded at once with trained disaster relief administrators and workers and gave relief immediately where calls were most urgent. It is noteworthy of this year's disasters that localities not commonly subject to nature's wrath have been visited by calamity. Most of the disasters occurred east of the Mississippi.—(*The World's Health*, October, 1924.)

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

LE BISMUTH DANS LE TRAITEMENT DE LA SYPHILIS. Par C Levaditi. Avec 31 figures et une planche hors texte. Paris: Masson et Cie, 1924. Pp. 316.

HOME CARE OF THE SICK. By Clara D. Noves, R.N. National Health Series. Edited by National Health Council. New York and London: Funk and Wagnalls Company, 1924.

CANCER. How It Is Caused; How It Can Be Prevented. By J. Ellis Barker. With an Introduction by Sir W. Arbuthnot Lane. New York: E. P. Dutton and Company, 1924. Pp. 478.

EXERCISES FOR HEALTH. By Lenna L. Meanes, M.D. National Health Series. Edited by National Health Council. New York and London: Funk and Wagnalls Company, 1924.

YOUR MIND AND YOU. Mental Health. By George K. Pratt, M.D. National Health Series. Edited by National Health Council. New York and London: Funk and Wagnalls Company, 1924.

THE GIANT CAT. Or The Quest of Aoun and Zouhr. By J. H. Rosny. Translated from the French by the Honorable Lady Whitehead. New York: Robert M. McBride and Company, 1924. Pp. 242.

THE CHILD IN SCHOOL. Care of Its Health. By Thomas D. Wood, M.D. National Health Series. Edited by National Health Council. New York and London: Funk and Wagnalls Company, 1924.

THE PATHOLOGY AND TREATMENT OF DIABETES MELLITUS. By George Graham, M.A., M.D., F.R.C.P. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton, 1923. Pp: 188.

THE HEALTH OF THE WORKER: How to Safeguard It. By Lee K. Frankel, Ph.D. National Health Series. Edited by National Health Council. New York and London: Funk and Wagnalls Company, 1924.

DISEASES OF THE MALE ORGANS OF GENERATION. By Kenneth M. Walker, F.R.C.S., M.A., M.B., B.C. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton, 1923. Pp. 234.

HOW IS YOUR HEART? Intimate Talks on the Prevention of Heart Disease and on the Care of an Already Damaged Heart. By S. Calvin Smith, M.S., M.D. New York: Boni and Liveright, 1924. Pp. 208.

ADOLESCENCE. Educational and Hygienic Problems. By Maurice A. Bigelow, Ph.D. National Health Series. Edited by National Health Council. New York and London: Funk and Wagnalls Company, 1924.

NEW VIEWS ON DIABETES MELLITUS. By P. J. Cammidge, M.D. (Lond.), and H. A. H. Howard, B.Sc. (Lond.). Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton, 1923. Pp. 611.

CHRONIC INTESTINAL STASIS. (Arbuthnot Lane's Disease.) A Radiological Study. By Alfred C. Jordan, C.B.E., M.D. (Camb.), M.R.C.P. (Lond.). Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 230.

MEDICAL DEPARTMENT OF THE UNITED STATES ARMY IN THE WORLD WAR. Volume XI, Surgery, Part Two. Prepared under the direction of Maj. Gen. M. W. Ireland, M.D., Surgeon General of the Army. Washington: Government Printing Office, 1924. Pp. 827.

GONORRHEA. By David Thomson, O.B.E., M.B., Ch.B. Edin., D.P.H. Camb. With Contributions by David Lees, D.S.O., M.D., F.R.C.S.E.; Claude H. Mills, M.R.C.S. Eng., L.R.C.P. Lond.; Robert Thomson, M.B., Ch.B. Edin.; Kenneth Maclachlan, M.B., Ch.B. Edin. Oxford Medical Publications. London: Henry Frowde and Stodder and Houghton, 1923. Pp. 519.

Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 11 NEW YORK, WEDNESDAY, DECEMBER 3, 1924 WHOLE No. 2294

When Should a Doctor Retire from Practice?

ROBERT T. MORRIS, M.D.
New York

Alexander Von Humboldt comprehended all of the natural sciences. Today there is no living man who can write a comprehensive geology.

In 1832 Liebig had to go to France to study chemistry with Gay Lussac and others because the Germans were not far advanced in that subject.

No one man today can comprehend all that is known in any one department of surgery. Whenever I go to the Academy of Medicine library in order to look up points noted by my secretary or by professional readers employed for the purpose I am deeply impressed by that fact.

Other surgeons are familiar with procedures of which I know little or nothing and I am familiar with points not as yet generally accepted by the profession. Such being the case, and here is the point, the question arises if any doctor has the moral right to retire when his teaching of certain principles means a saving of life and relief of suffering which otherwise cannot well be accomplished.

Personally I would like to retire from practice in surgery right now and to devote my next fifteen or twenty years to the development of a field in horticulture in which almost explosive advances are being made. Incidentally there would be freedom for going trout fishing on the right days when the wind is in the South, the days when emergency cases come while one is engaged professionally. What are the first duties in a situation of this sort? That is the question.

When I entered the field of antiseptic and aseptic surgery at a time of violent controversy over the values contained in this new departure there were few others in this country or in most of the other civilized countries who had become interested. Many hands rapidly made light work, however, of the principles of this third era in surgery which was new at the time. (The first surgical era was heroic, the second anatomical.) In the third or pathological era of surgery the idea was to destroy microbes or to prevent their growth. It included also methods for the removal of microbes and their products from the surgical field in operative work.

The professional imagination became so thoroughly captivated with a scientific toy in the third era that surgery gained tremendous momentum and velocity. The whole profession got under such headway that it was not inclined to stop and think over the principles of a still newer fourth era in surgery, the physiological era when Metchnikoff and Wright came along and told us about the natural protective forces of the individual; (normal cell protection against invading microorganisms). It was while giving attention to the principles of this gentler fourth era that I made observations which must still be taught and taught by object lessons for a number of years more.

Tuberculous lymph glands of the neck offer excellent opportunity for making a comparison between the third and fourth era methods of treatment. Third era methods call for removal of the infected glands. Third era treatment undervalues the fact that cervical gland infection is always a secondary phenomenon. Fourth era treatment on the other hand is always aimed at the primary focus. It includes minor surgery only. It depends upon calling out the protective forces of the patient, aided locally by forced hyperemia, the x ray, iodoform injection or other chosen resources in connection with treatment aimed at the primary focus.

It is no longer necessary for me to do much more teaching on this particular point because European surgeons are now at work with fourth era methods in these cases. Surgeons in this country will shortly get up to date in the matter.

It seems to me that it would be all wrong for one to retire until the profession in general has taken up the principles of a new era requiring object lesson teaching. To illustrate: When I published a list of one hundred appendicitis cases with a death rate of two per cent. made possible by the application of fourth era principles a man with the standing of Dr. E. C. Savidge wrote a letter to the *Medical Record* stating that such figures were "vainglorious cheats." In his opinion they represented a selection of cases for favorable report in the interest of the surgeon making the report. It meant that cases with serious complications, the ones most requiring the surgeon's help had been refused operation. The publication of such a report to his mind was despicable. (As a matter of fact the cases were unselected consecutive cases reported at face value.)

A surgeon of the standing of Dr. W. W. Keen stated at the Denver meeting of the American Medical Association that no one could get such a low death rate in abdominal surgery even if the patient did not have appendicitis. I do not remember

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whether it was Dr. Howard Lilienthal or Dr. L. W. Hotchkiss of New York who first began to listen but Dr. Hotchkiss was connected with a hospital where there were many emergency cases with an operative appendicitis death rate of thirty-one per cent. He suddenly changed over to fourth era principles and had a run of seventy-six consecutive appendicitis operations without a single death. It made a difference to fathers, mothers, brothers and children if they went to Dr. Hotchkiss for appendicitis operations or to surgeons who were not having seventy-six cases without a death following operation.

So long as the profession is still confining itself largely to third era principles what right have certain individuals to retire from the teaching of fourth era principles? Antagonism has been considerable in degree. This is not said in a spirit of complaint. In fact I rather believe in that sort of thing because there are so many false notions gaining headway from time to time (some of them were my own) that responsible surgeons who are well grounded in the ways with which they are familiar must be ever antagonistic to new views until they feel assured that the patients under their care are to be benefited in new ways.

PRINCIPLES OF FOURTH ERA SURGERY

In pyosalpinx cases treated by fourth era methods there is no need for removal of infected tubes and ovaries no matter how badly damaged they appear to be. If the tubes are split wide open, fastened to the anterior abdominal wall and drained externally while the patient is being treated with vaccines and with hygroscopic astringents a notable recovery is the rule. New fimbriæ and oviducts with new lumina may appear in cases in which at the time of operation it was difficult to distinguish ovary from Fallopian tube in the ragged bleeding mass which was fastened to the anterior abdominal wall temporarily.

Surgeons trained in the principles of third era surgery should not believe this at all when simply told about it. It is necessary to give repeated object lessons to the younger men on the hospital staffs and to let these younger men become impressed in their own way.

It seems to me that no one has a right to retire from practice when he is in a position to show how women may be brought back to child bearing in cases in which devastating pelvic surgery of the third era is still the rule.

In bladder surgery fourth era principles allow us largely to do away with the carefully and conscientiously devised aseptic apparatus of the third era which imposes great hardship upon the patient. Instead of the irritating bladder drainage tubes, the aseptic bottle under the bed and the irksome position of the patient upon his back, fourth era methods frequently allow the patient to be sitting out of bed shortly after the operation, wearing a small drainage wick and a pad of sphagnum moss in such a comfortable sort of way that he reads his newspaper instead of thinking of eternity. This is one of the things which men trained in third era principles will not believe, in fact should not believe until shown.

When the rubber glove was perfected as a valuable adjunct to surgery relating to the third era it had bad application in abdominal surgery. It interfered with a nice sense of touch required for speedy work through short incisions. The rubber glove made a break in aseptic technic because more bacteria fall into a large wound from the air than are carried into a small wound by well prepared hands. Large incisions and bungling work belonging to the rubber glove led to the present popular mistake of routine examination of various other abdominal organs whenever the surgeon's hand is introduced into the abdominal cavity for some one objective. This adds a violent attack of surgery to the patient's other troubles. Dr. T. L. Bennett once said that the best surgeon is the one who acts all of the while as though he were afraid of waking the patient up. My assistants must be taught to avoid waking the patient up.

According to the principles of the fourth era in surgery one must make such good diagnosis in advance of operation that he does not need to paw vital organs as an alternative to good preoperative diagnosis. Apropos of the pawing point, I once read an excellent description of treatment for postoperative gastric dilatation but wondered where so many cases came from. Sometime later I saw this operator make more than eighty false motions in an abdominal operation after I began to count. Each false motion registered a destructive impulse in the centres of consciousness of that patient. Young men must be taught that "the hand of the learner in surgery is heavy." False motions constitute a heavy blow from the hand.

If one works in abdominal surgery without rubber gloves the results are such that the object lesson is bound to impress observers. A surgeon has no right to retire from practice while younger men need to be shown something that is opposed to the regular teaching of the schools on that point.

THIRD AND FOURTH ERAS OF SURGERY COMPARED

Acute perforations of abdominal viscera introduce excellent opportunity for making comparison between the third and fourth eras of surgery. In cases of typhoid perforation of the bowel and in cases of gastric or duodenal perforation, caused by ulcer, half an hour or more of surgical work is required for third era methods which would remove infectible material and repair the damage done.

Some of the patients in this group are in no condition to bear the effects of an attack of surgery of a half hour's duration, yet they may make first rate response to a fourth era operation which requires not more than one minute of time for its performance. There is always opportunity for the exercise of surgical judgment, but the operator who has only the resources of the second and third eras at hand still needs to be taught what may happen when he applies fourth era methods in desperate cases.

One may ask why the leaders in any profession remain behind the times. It is because of their recognition as leaders. It means that their time is so fully occupied that time limitation interferes with acceptance of new ideas promptly. They are to be honored for their slowness that goes with sureness but is it right for the rest of us to retire and leave the profession to "play safe" in its ruts of ritual and of habit-thought?

Furthermore, in matters of behavior there is always a tendency for a profession to slump into commercialism. Idealists who enter our profession in a spirit of nobility of purpose may became shocked and

confused when they see large incomes running upon the wrong track. Older men are to hold up the hands of these younger men—to give them backbone instead of wishbone. We must remain in the field at a time when for personal joy we would prefer to retire from practice and to expend our coupon years upon useful hobbies.

114 East Fifty-fourth Street.

Treatment of the Patient With Gastric or Duodenal Ulcer*

CLEMENT R. JONES, M.D., F.A.C.P.

Pittsburgh, Pa.

Modern interest in gastric ulcer began following the papers of Gruveilheir published 1829-1835 and since then this subject has been constantly before the profession. There are many phases of the subject as announced, but as internists we are more interested in the etiology, pathology diagnosis and treatment. To be clear in etiology, diagnosis and certain of our rationale is the key to successful treatment.

The contributory or predisposing causes of ulcer of the stomach may be suggested as those which alter metabolism producing interference in circulatory, glandular, nutritional or nerve supply and function of the organ. There are circulatory disturbances due to changes in the thyroid, suprarenal, pituitary, thymus, parathyroid and the gonads. The spleen and possibly other glands may when in a state of infection or abnormal function play a considerable rôle in the etiology of ulcer, as does also systemic infection or bacteriemia due to focal infection of teeth, tonsils, sinuses, appendix, gallbladder, the tubes or ovaries, prostate gland and other parts of the body as the colon infected by ameba or other intestinal parasites, complicated by infection. Syphilis, tuberculosis and cancer are major causes of pathology in ulcer. Occupations which are accompanied by inhalation of poisonous gases, also gases used in time of war and the absorption of poisons by other modes of entrance, are predisposing or direct causes; shock, overwork or other interference with the normal balance between vagus and sympathetic systems and trauma, such as extensive burns, have been followed by gastric and duodenal ulcer.

PATHOLOGY

Ulcer is usually preceded by an erosion which continues until it involves the submucosa and muscularis. Erosions in the fundus, or greater curvature as a rule heal promptly, but, in the lesser curvature, or that part of the stomach called by Aschoff, "the gastric pathway," the alley through which pass foods that are more or less rapidly carried into the duodenum, here single or multiple erosions do not heal promptly, and if the conditions favorable to repair are absent, the deepening erosion becomes an ulcer, and while this unfavorable state lasts and the food is irritating in physical and chemical make-up, the ulcer may continue to widen and deepen into the funnel shaped character so common in this location, the apex directed toward the cardia and the base toward the pylorus with the overhanging cardial margin definitely demonstrable. The preulcerative period during which we have in many patients symptoms of fullness, occasional postprandial pain and eructation of gas and acid, is no doubt one in which one or more erosions are forming and healing. After a while the condition, both constitutional and local, becomes such that the stage of acute, subacute and chronic inflammation follow more or less rapidly, and we are confronted with a patient suffering from well established gastric ulcers.

Any one or a combination of a number of the conditions outlined above may result in the disturbance of metabolism which is necessary to produce the state of lack of resistance which will allow the formation of ulcer.

Cohnheim calls attention to the climacteric ulcer which may be the result of the endocrine readjustment which is taking place at the time of the menopause. There is also the ulcer of chlorosis which occurs during adolescence, the etiology of which has not yet been satisfactorily explained. In 1920 Dr. Smithies gave a classification based on etiology which includes the chlorotic ulcer but not the climacteric ulcer, to which may also be added the tuberculous and under his industrial intoxication we may include poisonous gases of industry and war. It is probably necessary to have sufficient chemical or physical direct trauma to produce the solution of continuity of erosion in the mucosa. When once an ulcer is started it is difficult to heal until the predisposing causes are to some extent under control or relieved. The disputed hypothesis of the degree of gastric acidity and its place in the etiology of ulcer may be disposed of by saying that it probably has a minor part to play in some cases, but it is necessary to have the lack of resistance or constitutional condition producing a disturbance of metabolism, plus local trauma. Hyperacidity has not been shown to be the predisposing cause of ulcer; we have a considerable percentage of ulcer patients who have either subacid secretion or no hydrochloric acid in the gastric secretion. There are many patients showing extreme hyperacidity with no ulcer present. Rough or otherwise irritating food has much to do in preventing healing. Digestion of devitalized stomach tissue undoubtedly occurs, but the state of tissue predisposition is not produced by direct trauma or excess of acid. These may be factors when there is lowered vital resistance, reduced vitality through the nervous system, the circulation or metabolism.

*Read before the American Therapeutic Society, at Toronto, Canada, May, 1924.

DIAGNOSIS

During recent years we have not depended on the vomiting of blood for diagnosis. Up until a few years ago diagnosis of gastric ulcer was seldom made without hematemesis. It was frequently discovered later that the hematemesis was due to another cause than ulcer. The other extreme was reached in Moynihan's work where he relies almost wholly on the anamnesis for the diagnosis of duodenal ulcer. The clinical diagnosis of gastric and duodenal ulcer is difficult and must be confirmed by positive x ray findings or other conclusive evidence. Many cases of ulcer do not give x ray evidence of a positive character. There are many proved cases of ulcer in which surgical and pathological findings make certain the diagnosis, where careful searching x ray studies are made with no evidence of ulcer shown either on the fluoroscopy or radiograms. The history plays a large part in the diagnosis of this disease, but needs the support of physical findings. A history of pain at definite time, before or after meals, relieved by or increased by eating, is a symptom of diagnostic value and probably the most important point in the diagnosis of ulcer. However, there are ulcers without complaint or pain. Relief of epigastric pain by orthoform, five grains in fifteen to twenty minutes, was first mentioned by Dr. Murdock as a diagnostic test for ulcer; a definite point of tenderness in the epigastrium and one opposite the tenth and twelfth dorsal vertebræ on the left side; a positive Einhorn string test of the presence of occult blood in the feces or tarlike stools, also gastric blood, all contribute to make up the picture of gastric or duodenal ulcer, but any of these symptoms may be absent and yet ulcer be found.

Examination of stomach contents is of great assistance in spite of the statements to the contrary made recently by those who see only the acidity as recorded on the chart and do not examine the contents for other evidence of pathology; such as the state of secretion and excretion, regurgitation, motility and retention; infection, fermentation, putrefaction and other findings. These are points of value in determining the state of the patient to be treated, and are properly a part of the diagnosis and at times very helpful in the treatment. Differential diagnosis may be necessary between epigastric hernia, cholecystitis, cholangeitis, appendicitis or gastric symptoms of nephritis or gastric crisis of tabes. (Acute perforation may be confused with pneumonia or another acute inflammatory condition of the abdomen.) Arteriosclerosis, lead poisoning, nephrolithiasis, acute and chronic gastritis, hyperchlorhydria and cancer.

PROGNOSIS

Under careful medical supervision the prognosis is good as to relief from symptoms and healing of the ulcer, but permanent relief depends upon removal of the cause or underlying metabolic or constitutional state. The prognosis is best when the evidence by signs and symptoms of such condition are sufficient to recognize the predisposing cause of the ulcer; be it focal infection of gall bladder or appendix, vagotonia, syphilis or other disturbed states. Such cases are not always plain and may be recognized with difficulty.

The transition of ulcer into cancer has not as yet been proved although pathologists, internists, and surgeons have long sought a solution of the problem. "Does simple benign ulcer of the stomach become malignant with a frequency which should give such a complication a prominent place in prognosis." My conclusion after thorough statistical research announced in a paper read before the American Gastroenterological Association in 1923, is, that it does not.

TREATMENT

The treatment of the patient that has the ulcer and not the ulcer that has the patient is the most important dictum in the management of any case. Each patient is an individual and is a complex problem to understand before undertaking the relief of the ulcer in his stomach or duodenum. Points to be included in an examination on which to base treatment are the various evidences of constitutional inferiority such as habitus enteropticus, cranial and facial asymmetry, visual defects, high arched palate, maxillary and mandibulatory prognathism, irregular denture, long slender bones or disproportionate bony growth, irregular distribution and growth of hair, as unusual eyebrows, pubic hair of opposite sex type, age and character of change of voice and growth of beard in male, age at first menstruation in female, peculiarities of appetite, urinary and sex habits and sweating, cold hands and feet, instability of pulse and temperature, sexual immaturity, inability to nurse a child, sterility, emotional instability, food aversion and allergy.

We must consider an inferiority complex and egotism, overweight or excessive underweight, marked variation from two main types, the tall thin and the short stout, tonsils and adenoid development infection from and obstruction by, the basal metabolic rate indicating the state of the thyroid and other conditions, the evidence of abnormal parathyroid, pituitary and suprarenal states, vagal or sympathetic dysfunction, the vagotonia of Eppinger and Hess, eyestrain as hypertrophic astigmatism, occupational or business nerve strain, mental disturbances due to shock, fear, fright or other causes, infection of the focal variety causing bacteriemia with a secondary infection located in stomach or duodenum and sometimes simultaneous infection of the appendix, biliary tract and stomach or duodenum.

A very clear case, which I have already reported, followed an acute case of tonsillitis with appendix, gallbladder and duodenum all in simultaneous subacute inflammation. A combination of a number of these conditions increases greatly the difficulty of both treatment and diagnosis.

After a complete survey of the patient's condition, along the lines mentioned above, it may then be determined what local measures should be taken to promote the healing process.

In planning treatment for an individual who has been found to have as a manifestation of his ill health an ulcer in stomach or duodenum, we are always called upon to suggest one or other of two treatments, ambulatory or complete rest in bed. Any modification of a complete rest in bed treatment should be classed as ambulatory. Local conditions in the stomach may be improved by diet suitable to

the zymotic state, the inflamed condition of the organ, and the hypersensitiveness of the patient. We not infrequently find anaphylaxis reaction to milk and eggs, which are the basis of certain dietetic treatments of gastric ulcer, and when no rennin is present in the stomach we have found that many patients are more satisfactorily treated with buttermilk as part of the diet. Duodenal feeding with a tube by the Einhorn method using the Murphy drip apparatus has proven very useful in some cases, where all food was distressing to the irritated stomach and in others where food of any kind seemed to interfere with the healing process. If a luetic ulcer is present and antiluetic treatment is used, little else is necessary, but a diet which will not irritate either by its chemical or physical properties will increase the rapidity of the cure. Unfortunately we are not able to meet other causes as we are lues. We find that ulcer of the stomach due to one of the other more or less indefinite states may require more attention to local treatment and general health measures.

We must deal in many instances with food hypersensitiveness or protein allergies, as well as the chemical and physical state of the food and its action on the stomach in an ulcerated state. We must consider the effort required on the part of the stomach to digest the food and the stimulating effect which such food may have on acid and enzyme secretion and the motility of the organ. (Efforts to promote the healing process in ulcer of the stomach and duodenum are based on removal of the conditions which started a lowered resistance allowing trauma plus local infection, fermentation or putrefaction of retained food and acid digestion, to start and maintain an ulcer.)

The food when rough, sour and indigestible, or where anaphylaxis to it exists, continues a condition unfavorable to the process of repair. The constant peristaltic movement of the ulcerated stomach wall surrounding a meal mass of rough, sour and highly seasoned food is not an ideal gastric exercise and of course prevents any attempt at natural unaided healing. If there be a mild or only slight metabolic disturbance or lowering of tissue resistance, a correction of dietary indiscretion and shaping a food program to meet the zymotic and physical pathology of digestion is at times all that is required to cause healing of the ulcer. If the primary impairment of resistance is great we may expect frequent recurrence, and local conditions must be ideal as to rest and diet to bring about a satisfactory result; recurrence will likely follow unusual stress on the stomach by lifting, jolting or dietary indiscretions.

If the primary etiology has been removed we may expect a return to normal on the part of the stomach and food will have little or no unfavorable influence on the healed stomach. These patients will say, "I can eat anything without causing trouble." As a rule a modified milk as food is acceptable, finely divided, well cooked cereals and soluble albumens are well borne by the stomach. Rest in bed in cases complicated by ptosis is almost always necessary. The ambulatory treatment is more frequently successful in men than in women for the reason that ptosis is more common in women. When marked ptosis is present in either male or female a period of three to six weeks' rest in bed with the foot of the bed elevated at least six inches aids materially in arresting the symptoms and promotes the healing process. It has been my experience that the shorter rest periods in such cases are usually not successful. The length of time during which the patient should take liquid, soft or semisolid foods must be determined by the condition in each separate case. Where there is a definite tender spot in the epigastrium liquids should be given until the tenderness has disappeared. It is absolutely impossible to accept any scheme to follow any rule for certain foods for one week, other foods for the next week increasing for the third and fourth week. One patient may be so constituted as to do well on milk, modified or plain and another may do well on gruels, rice water or other liquid or semisolid food and consequently such variations as fit the constitutional peculiarities of the patient and his ailment are points to be decided in the treatment of each person.

COMPLICATIONS

Pain, pylorospasm and hyperperistalsis may be relieved greatly by application of heat and moisture to the epigastrium. The flaxseed poultice of former times may be improved on very much by the use of an electric hot pad. Care not to blister the skin is necessary. In severe pain orthoform in five grain doses every sixth hour as a rule gives satisfactory relief. Unless vomiting is due to obstruction the application of heat as above with the addition of tincture of belladonna given to the point of dryness of the throat or dilated pupils will usually be an effective remedy.

Perforation is a complication to be anticipated by instructing the patient of the possibility of a sudden severe pain with shock and the importance of his physician and surgeon being notified at once. To neglect this is the one great danger, failure to recognize the perforation is almost certain to result in the death of the patient. The earlier the abdomen is opened and the perforation closed the greater is the patient's chance of recovery. Hemorrhage due to erosion of vessels in the gastric and duodenal ulcer or exulceratio simplex of Dieulafoy may be successfully managed in a large percentage of patients, by the following treatment:

First allay the fear usually associated with it, inhibit all unnecessary movements on the part of the patient, have as few attendants as consistent care will permit, allow no visitors, apply ice to epigastrium, give morphine hypodermically. Internally epinephrinized gelatine in doses of a tablespoonful every three hours, gelatine to be of the consistency of syrup and contain thirty drops of one in a thousand solution of epinephrin to each tablespoonful to be added at the time of administration. No other food or medicine to be given by mouth until all evidence of hemorrhage has disappeared and epinephrinized gelatine to be continued until occult blood is no longer present in the stool.

Surgical procedures are a necessary part of the treatment of certain complications of ulcer, but have no place in the treatment of uncomplicated or simple ulcer. Surgery is available for the relief of stenosis by one of the approved operations, pyloro-

plasty or gastroenterostomy being most satisfactory; the latter, when the stenosis is complete and the former, when partial stenosis permits of that operation. Surgical treatment for the relief of hemorrhage of the stomach has been unsatisfactory in most cases, but operation in the interval between hemorrhages for the purpose of excising the ulcer or cauterizing and infolding it, has given more favorable results. Perforation as stated above requires that surgery be resorted to at once if the patient's life is to be saved. We should keep in mind that with surgical as well as medical management of ulcer and its complications changes in local conditions do not remove the primary etiology.

Treatment of the subject to keep him well, or to prevent a recurrence in spring or fall, or at whatever time his accustomed attack may be due, is a task to which most careful attention must be given and in which the physician must have the hearty cooperation of his patient if he is to be successful in keeping him well. If the etiology has been discovered in a focal infection or other removable cause, and it has been removed, then the task is not so difficult, but if the ulcer is of idiopathic origin, too much attention cannot be given to details even of a minor character as to habit of living and diet. In neurasthenic individuals with a tendency to introspection, it is necessary to avoid such directions as will favor a continuance of the fault. This is sometimes difficult to do and yet secure adherence to dietary and other regulations. It can be done better by positive orders as to what must be done than by restriction or "forbidding" orders.

The medical or surgical treatment by rest cure or operation are a preliminary measure to the care and medical management of the patient, diet, exercise, occupation and habits, in fact all the activities of mind and body should be so directed as to maintain a state of resistance above the predisposing level necessary to permit a recurrence.

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The Treatment of Lupus Erythematosus by Filtered X Ray to the Glandbearing Regions of the Body

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It is evident to the experienced dermatologist that purely local treatment of almost any type of lupus erythematosus is unsatisfactory. Too often an indolent patch will improve, only to show an extending border later. Or new lesions will appear when the old patches are seemingly under control. Efforts to influence the constitutional background, therefore, seem logical. In the absence of any exact knowledge of the etiology of lupus erythematosus, such efforts must remain empirical. Any measure that affords help in the management of so resistant a disease is welcome, however.

In 1923 I reported a case (1) treated with filtered x ray to the glandbearing areas of the body in a manner similar to that commonly used in Hodgkin's and other lymphogenic diseases. The response was immediate and striking after all other local and constitutional treatment had failed. My experience in this case induced me to continue this form of treatment in sixteen additional cases.

REPORT OF CASES

Case I.—(A373335). A man, aged thirty-three years, was seen at the Mayo Clinic for the first time September 27, 1921. His face was extensively and symmetrically affected, and there were a number of patches in the upper sternal region. He had been treated elsewhere with local measures, such as carbon dioxide snow, the x ray, and ointments. Examination revealed marked activity of the lesions, also atrophy and telangiectasia. Tuberculosis was not demonstrable. No pyogenic foci were found except questionable tonsils, which were removed. The patient was given quinine internally, and a calamine lotion with two per cent. iodine in benzol, locally. On his return in March, 1922, the eruption had not changed appreciably, and soon afterward the first of a series of filtered x ray treatments was administered to the glandbearing areas. One month later decided improvement was noted. At this time a series of x ray treatments of a similar type was repeated. In August, 1922, the lesions on the chest were entirely involuted and the facial lesions had diminished greatly. In December of the same year a fourth series of the x ray treatments was given. In September, 1923, a few very small erythematous patches remained; these involuted promptly under local treatment with radium. The result, thus far, has been very satisfactory.

Case II.—(A390080). A woman, aged thirty-seven years, in whom there developed lesions of the rather indolent type. She had achylia gastrica, and probably, chronic cholecystitis. Five infected teeth were extracted, and one series of filtered x ray treatments was administered. The outcome in this case is not known since contact with the patient was lost.

Case III.—(A393641). A man, aged forty-four years, had lesions of the disseminate type, and obscure abdominal complaints. He had been given the conventional treatment, including removal of tangible pyogenic foci, without appreciable response. A series of x ray treatments to the glands was given. The patient has not been heard from since.

Case IV.—(A403905). A woman, aged thirty-three years, had an acute lesion resembling closely the erythema perstans of Kaposi. She was persist-

ently febrile when admitted to the hospital September 6, 1922. The temperature later became normal. All tangible pyogenic foci were removed. The patient improved considerably with rest in bed and other measures. From October 10th to October 13th a series of filtered x ray treatments was given. The patient made a complete clinical recovery, and was dismissed from observation in good condition October 24. A certain amount of the beneficial effect must be credited to the x ray, but some of it should be attributed to rest in bed and hygienic measures.

Case V.—(A413651). A girl, aged nineteen years, examined December 28, 1922, was found to be very toxic, with erythema perstans, and periodically marked defluvium capillorum. Pyrexia subsided with rest. The infected tonsils were removed. X ray of the chest disclosed a definite old tuberculous lesion which clinically was probably not active. The first series of x rays was given from January 18 to 20, 1923. The patient was seen by the entire dermatological staff of the Clinic February 2nd, and it was agreed that a remarkable improvement had occurred. April 2nd she returned to the Clinic, because of a relapse, but she had gained ten pounds in weight. Another series of x ray treatments was given with considerable benefit. She gradually failed, however, and died September 28th.

The patient in this case had been unable to carry out the treatments as advised, but it is doubtful if any treatment would have changed the outcome.

Case VI.—(A221958). A girl, aged nineteen years, presented the discoid type of lesion, which had resisted all efforts at treatment, even destruction by carbon dioxide snow. Active borders reappeared persistently. She was given a series of x ray treatments in September, 1922, with sufficient benefit so that she requested a second series. The x rays did not induce total involution of the patches, but the lesions healed completely in a short time, under the local application of radium, and have shown no activity since.

Case VII.—(A412484). A man, aged thirty-one years, had noted numerous patches on the face; most of them were of the acute type, but some were definitely discoid. His hair lacked luster; he had no endurance and complained of night sweats. No tuberculosis could be demonstrated, and no pyogenic foci were found. Under one series of x ray treatments all lesions gradually disappeared while the patient was ambulant. His vigor returned to normal, enabling him to take a position which entailed considerable physical activity. The luster of the hair was strikingly improved. The remainder of the treatment consisted of indifferent local applications and general hygienic measures.

Case VIII.—(A415268). A woman, aged thirty-three years, had the definite discoid chronic type of eruption, with multiple lesions on the face. A series of x ray treatments was given without response. Other measures, including those of a local destructive character, were also unsatisfactory.

Case IX.—(A416049). A woman, aged forty-six years, had lesions of the disseminate type, involving all of the face, neck and a greater part of the forearms. One series of x ray treatments, soon after the patient was examined, produced a decided improvement of the lesions, and a gain in general health. X ray examination of the chest revealed a thickened pleura at the left base and calcified mediastinal glands on the left side. No pyogenic foci were found. The patient was at the Clinic from January 23rd to February 5, 1923. When she left, the eruption had practically disappeared. Local applications were not used at any time.

Case X.—(A421900). A woman, aged thirty-two years, had the disseminate type of lesion with little constitutional intoxication. No demonstrable tuberculosis was noted. Four periapical infections were found, and the tonsils suggested infection. One series of x ray treatments was given with no striking response. Various other measures were used, but the final result was not striking. The value of the x ray treatments could not be estimated in this case.

Case XI.—(A425222). A woman, aged forty-three years, was examined May 10, 1923. She had a butterfly shaped patch of the discoid type over her nose, and disseminate lesions on the scalp, face, neck, forearms, and hands. Tuberculosis could not be demonstrated, and pyogenic foci were not found. A series of x ray treatments was given from May 14th to May 18th. May 29th, a decided improvement was noted. June 8th, the disseminate lesions had practically involuted and the discoid patch had appreciably diminished. From October 22nd to 26th, another series of x ray treatments was given; following this, there was no evidence of active lesions. This patient had also received quinine, and various mild local applications. The very prompt response in so extensive an involvement, as seen in this case, favors the belief that the x ray was responsible for the result. The patient was again seen in June, 1924; the lesions were completely involuted.

Case XII. —(A431237). A woman, aged forty-five years, had rather extensive lesions of the face, of the chronic discoid type. Three series of x ray treatments and mild astringent local applications diminished the lesions materially, but the patient's general condition remained poor except for a slight gain in weight. The constitutional complaints could probably be explained by a bronchiectatic cavity from which the patient expectorated spirilla. The results were no better than might have been obtained by rest and tonic measures.

Case XIII.—(A433598). A woman, aged forty-years, had lesions of the disseminate type on the forehead, face, and hands. She complained of lack of endurance, but otherwise felt well. An old tuberculous focus in the right lung was revealed by the x ray. No definite pyogenic foci were found. Three series of x ray treatments afforded marked improvement. Definite benefit was noted after the first series, given in July, 1923.

Case XIV.—(A442612). A woman, aged thirty-nine years, had rather extensive involvement of the face from an active discoid lesion. An old tuberculous lesion in the left lung was revealed by the x ray. Six infected teeth were removed. After one series of x ray treatments in October, 1923, the lesion improved so much that her friends at home "hardly knew her." She was given a second series of x ray treatments in December, and when she left

the Clinic there were no active lesions. This patient had taken small doses of quinin for about a month. The local treatment had been pursued for a short period with an ointment containing ichthyol, resorcin, and precipitated sulphur. The Kromayer lamp with pressure to the lesions was also employed, and must be credited with at least part of the satisfactory result.

Case XV.—(A424077). A woman, aged fifty years, had rather extensive discoid lesions on the face, with active borders. Old tuberculous foci in both upper lobes were revealed by x ray examination. The tonsils were in fairly good condition, and the teeth showed no periapical infection. The usual measures of treatment were employed, and an ointment containing five per cent. ichthyol, five per cent. sulphur precipitate, and five per cent, resorcin, a solution of two per cent. iodine in benzol, and quinine in small doses was continued at home. The patient returned to the Clinic about one year later. No striking benefit was noted. She was then given two series of x ray treatments and the lesions were exposed to the Kromayer lamp with very satisfactory results. The patient is still under treatment.

Case XVI.—(A464665). A man, aged thirty-seven years, had a chronic patch on the nose, and many of the disseminate type on the face, neck, arms, and hands. Tuberculosis was not demonstrable, nor could any pyogenic foci be found. The patient received a series of x ray treatments in May, 1924, and another in June. The response has been very good, and treatment is being continued.

Technic of X Ray Treatment Employed

The irradiation of the principal gland bearing areas of the body was carried out in a manner similar to that used in the lymphogenic disorders, notably Hodgkin's disease. The exact dose varied somewhat, but a good example of the various factors employed in most of our cases follows:

1. For cervical, axillary, and inguinal regions

Kilovolts	Distance	Milliamperes	Filtration	Time
135	12 inches	5	4 mm. aluminum	10 minutes

2. For chest and abdomen anteriorly and posteriorly

Kilovolts	Distance	Milliamperes	Filtration	Time
135	12 inches	5	6 mm. aluminum	10 minutes

These treatments were usually repeated every six to eight weeks. The lesions were not directly exposed to the x rays.

Discussion

The case records show that strict experimental conditions were not maintained. This was impossible for practical reasons. In a number of cases a determined effort was made to restrict therapeutic measures to the x ray. Lupus erythematosus sometimes improves with a slight change in hygiene, and the mildest astringent applications may have a beneficial effect. I feel satisfied, however, that the results in this series of cases are better than have been obtained by any therapeutic measure with which I was previously familiar. When x ray treatment proves beneficial, the results are very apparent in a few days, sometimes within twenty-four hours. This treatment is not intended to replace older internal remedies, nor should it be substituted for local applications that have been tried and found satisfactory. The treatment will, in many instances, produce a decided improvement in the general physical condition and inactivation of the cutaneous lesions by its constitutional effect, thus providing a favorable setting for local remedies.

In Cases I, IV, V, VI, VIII, X, XI, XIII, XIV, XV, and XVI, the results were most satisfactory. In Cases II, III, and X, the treatment did not have a reasonable trial, chiefly because of lack of cooperation on the part of the patient. In Cases VIII and XII, it proved of no benefit; neither did any other form of treatment.

The rationale of this method was originally based on the assumption that the pathologic focus of lupus erythematosus lies primarily in the glandular system. The literature is filled with reports of tuberculous adenopathy associated with lupus erythematosus. Gennerich (2) reported a case of extensive non-tuberculous glandular disease associated with the eruption. My own experience in several cases taught me that a scrutinizing clinical investigation for tuberculosis may be entirely negative, yet at necropsy large masses of tuberculous, mediastinal, abdominal or pelvic glands may be found. Such facts and the wellknown observation that lymphogenic diseases and tuberculous glands respond favorably to the treatment by x ray induced me to give this method of treatment a trial in lupus erythematosus.

The beneficial effect seems to be rather in the nature of a foreign protein shock than a direct destructive or inhibitory action on the glands exposed, and is apparently in direct proportion to the x ray nausea engendered in the patient. Improvement is often so rapid that gradual changes in the glands can hardly explain it. Studies of the blood may help to throw further light on the action of the x ray in these cases. Extensive studies of this character were not made in the Mayo Clinic series. It was noted, however, that the leucopenia so frequently associated with the more acute type of lupus erythematosus was improved by the x ray treatment, but this may simply have been the result of the general improvement in the patient. If the effect is in the nature of a foreign protein shock, it probably differs from that seen after the parenteral injection of such substances as killed typhoid bacilli or peptones. At least I have never been able to obtain any results comparable to those following this method of x ray treatment. The removal of pyogenic foci will not explain the improvement. Because of the frequently severe reactions following dental extractions when the disease showed a tendency to disseminate, x ray treatments were given to improve the general physical condition with the intention of removing the pyogenic foci later, but decided improvement often occurred before the teeth were interfered with.

Filtered x ray treatment of this type seems to be most valuable in the fairly acute case that is not so toxic as to have caused severe injury to a vital organ. A patient, subject to severe attacks of hyperpyrexia, and one who has much albumen in the urine and marked myocardial injury, will often be strikingly benefited, only to succumb to the disease in the usual manner. In the chronic discoid type with an inflamed progressive border, inactivation can be

achieved, permitting subsequent efficient local treatment of the patch. Thus far, I have been able to give a satisfactory number of treatments in only one case (Case I); the results were very satisfactory. My aim is to give at least five or six series of exposures. It is, therefore, impossible to say at present whether relapses will be as frequent as under other methods of treatment. It is not likely that the results will be absolutely permanent, since we probably cannot as yet reach the cause of the disease. Nevertheless, the addition of this to other types of treatment often proves satisfactory.

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Aortitis

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Physicians who have had broad experience in the management of cardiovascular diseases are forced to the conclusion that there is not as comprehensive a knowledge of the diagnosis and management of aortitis among the general practitioners as may be desirable. This latter may be attributable primarily to the infrequent recognition of this morbid condition by the family physician whose opportunities for clinical study and observation are, as a rule, somewhat limited. Bearing these facts in mind, this paper is not written for the skilled cardiologist, but for the possible benefit of the general practitioner whose duties are manifold and opportunities generally limited.

An aortitis may be satisfactorily defined as an inflammatory process, either acute or chronic, involving either in whole or in part the main trunk of the arterial system, the aorta. With rare exceptions, aortitis is the direct result of action of microorganisms or their toxins, some of which may show selective action upon vascular tissue. Occasionally inflammatory processes involving the aortic adventitia are met with as true secondary processes—as some acute or chronic disease implicating the external coat of this great vessel by contiguity of surfaces as may be seen during the course of pericarditis, mediastinal abscess, ulceration of the trachea or esophagus. With this type of disease, we naturally are not interested in this discussion.

ACUTE AORTITIS

My personal observation has led me to believe that acute inflammation of the aorta is comparatively common, but frequently not suspected—in some cases unrecognized because of its occurrence in the course of acute infections, and being regarded as simply a part of the symptom complex of the disease. Sometimes even at necropsy we are too prone to accept the naked eye appearance of the aorta as conclusive, instead of making a careful microscopical study with a view of determining histological changes occurring in one or more coats of the vessel. An acute inflammatory process affecting a part or all of the aorta and due to the direct action of microorganisms or their toxins may occur during the course of any one of the acute infectious diseases, especially so in rheumatic fever and the exanthems. Typhoid fever, influenza, septicemias are frequent etiological factors. Often, an acute aortic involvement is noted in cases of acute endocardial disease with or without valvular vegetations, and is here to be regarded as a spread by continuity of surfaces of the morbid process. Syphilis is a common, in fact, possibly the chief cause of the production of acute aortic disease.

Considering the pathological anatomy of acute aortitis, briefly, we find that in some acute infectious diseases such as meningitis, scarlet fever, rheumatic fever, and other conditions there is an inflammatory process with its special lesion in and under the endothelium, in contradistinction to the lesion of early aortic luetic infection which begins primarily around and within the vasa vasorum. I will consider these varying anatomicopathological conditions more fully under the discussion of chronic aortitis.

SYMPTOMATOLOGY

The symptoms of acute aortitis may be overlooked, which fact is readily understandable considering its frequency of occurrence in the course of other diseases by which its clinical picture may be completely overshadowed as has been previously indicated. Again its onset may be exceedingly mild in character, producing very few symptoms, and these of short duration, so much so that unless the physician is on the alert and suspecting aortitis, its presence may not be determined. Moderate elevation of temperature usually accompanies the attack, but again one must remember that temperature rise may be due to the primary infection, and not be a manifestation of aortic involvement. There is almost invariably some pain and tightness in the chest. The pain varies from a sense of soreness and feeling of tightness beneath the upper part of the sternum, to a sharp, stabbing, agonizing pain assuming the character of true angina pectoris, and, at times, radiating to the shoulders and down the arms of either side. Leger and Stewart have described a burning sensation over the arch of the aorta, and this I have noticed in one of my cases of malignant scarlet fever; the patient constantly complained of a burning sensation over the upper part of the chest and back. Autopsy revealed a marked endocarditis, myocarditis and aortitis. Dyspnea may be paroxysmal, and frequently comes on slight exertion. Cough and disturbances of the gastrointestinal tract are observed in some cases.

On physical examination, inspection may reveal undue throbbing of the carotid arteries, and throbbing in the episternal notch. The subclavian pulsations may be seen above the clavicles. By placing the index finger in the episternal notch, one can feel a transmitted impulse due to the increase in the amplitude of the aortic pulsation. This sign, of great diagnostic importance in both the acute and chronic types of aortitis, is never detected in a healthy individual except if extremely emaciated. There may be dullness over the manubrium and to the right and left of the first and second interspaces. A loud aortic second sound of a peculiar bell like quality is characteristic on auscultation. In some cases the aortic valves are implicated and systolic and diastolic murmurs become audible. There may also be a systolic murmur from dilatation of the aorta, the aortic valves being healthy.

A routine fluoroscopic examination of the thorax by a trained, experienced röntgenologist is of value in suspected aortic involvement. Careful observation will reveal an increase of the density of the aortic shadow associated with sclerosis, alterations in the amplitude of aortic pulsation, localized or generalized aortic dilatations, or expansile pulsations.

In recapitulation, it may be said that the recognition of acute aortitis depends on the presence of some acute infectious process; the suspicion of the condition by the attending physician; the character and location of the pain; the physical signs indicating an aortic affection; enlargement of the aortic shadow as visualized by the x rays; additionally, in the syphilitic type, a careful history and other evidences of the disease, together with a positive Wassermann reaction when performed by a trained serologist, are of the utmost diagnostic importance.

The prognosis depends upon the virulence of the etiological factor and the resisting powers of the host. Complications, frequently resulting in myocardial changes, coronary arterial involvement, permanent injury to aortic orifice and weakening of arterial wall as to cause dilatation, aneurysm or even rupture are all possible factors to be considered during the course of an acute aortitis. In the syphilitic form, the prognosis depends essentially upon the early recognition of the disease, and the promptness and adequacy of administration of specific therapeusis.

TREATMENT

Treatment should be instituted with a view of overcoming the etiological factor wherever possible. Absolute rest is imperative. The strength of the patient must be sustained by highly nourishing and easily digested food. Ice bag over the sternum is beneficial especially for the relief of pain. Pain if severe is relieved by opiates and if truly anginal in character the nitrites are indicated. If there is much nervous system disturbance, the bromides of sodium or potassium are beneficial. If there is a tendency to cardiac failure, the heart must be watched and cardiac tonics administered, the tincture of digitalis being especially useful in my experience. In syphilitic aortitis, it is of the utmost importance to administer antisyphilitic agents for their full therapeutic effects. Return to active life following an acute aortitis of any type must be made with great caution, and particular attention paid to the occurrence of subsequent substernal pain.

Chronic aortitis may be the result of an acute aortitis which produced permanent dilatation; but the two most frequent resultant pathological conditions designated as chronic aortitis are—depending upon etiology—the ordinary arteriosclerosis and the diffuse syphilitic disease of the aorta. I will dwell more particularly on syphilitic disease of the vessel because its lesions are of deepest significance especially on account of their intimate relation to aneurysm production.

SYPHILITIC AORTITIS

Syphilis has been recognized as a factor in the cause of aneurysm long before the treponemata were demonstrated in the walls of the sac. Today, due to the monumental contributions of Reuta, Benda, Wright, Warthin, Longcope, and others, no one doubts that syphilis is the paramount cause—if not the sole cause—of aortic aneurysm. In syphilitic disease of the aorta, as I previously indicated, the early lesion is now recognized as one primarily of the vasa vasorum supplying the media, and resulting aneurysm occurs after degeneration has taken place in that part of the media supplied by the early attacked vasa vasorum. Here, it may be of interest to call attention to why aneurysms are so prone to result from syphilitic aortitis and not from other varieties of aortic diseases.

Any of the pathogenic organisms or their toxins may give rise to aortitis, but, with the exception of Treponema pallidum, such aortic involvements are primarily of the inner lining of the vessel, the intima, and consist of a primary proliferation of the endothelial cells of the inner coat with only a moderate—if any—amount of involvement of the media or middle coat, never sufficient to give rise to weakening and potential aneurysm formation. Anatomically, this is easily understood, the aorta has two layers of muscle, one an inner circular layer which is thin, and the other an outer longitudinal layer which is thick and constitutes the main support of the vessel. The inner muscular layer is nourished largely by osmosis from the blood current, while the outer muscular coat is nourished by the vasa vasorum.

In aortitis the result of ordinary bacteria or their toxins affecting the intima and causing proliferation, a certain amount of degeneration of the inner muscular coat will result when the proliferated intima reaches a thickness which will not permit of osmosis. This degeneration, however, does not affect the big outer muscle layer because its nourishment is not supplied through osmosis from the aortic blood current. The ultimate result, therefore, of an aortitis due to causes other than the treponemata is the ordinary diffused lesions involving the intima and inner coat of the media and commonly termed arteriosclerosis. The whole vessel may be involved in such a process and will present, to the naked eye, lesions that are soft, firm or calcareous in character, but never are aneurysms formed. On the other hand, aortitis due to treponemata frequently results in aneurysm because the reactionary process is not primarily of the intima. It begins as a perivascular infiltration about the vasa vasorum, which vessels are

the sole means of nourishment to the important outer muscular coat of the vessel. This perivascular infiltration leads in time to an occlusion of the vessels, and this ultimately results in depriving the great outer muscular coat of its nutrition, which can only eventuate in a degeneration, and such a degenerative process destroying as it does the great support of the aorta at the attacked point, results in a bulging or aneurysmal dilatation. The subsequent sacculation of the aorta at such a gummatoidal area may vary from a slight depression to a well formed large sac. At any rate, it increases in size, slowly but surely, unless the underlying cause, viz, the treponemata are destroyed.

The clinical picture and symptoms, to which this paper must naturally have special reference, as set forth here, are those I commonly encountered among my own cases. The symptomatology which attracts attention is especially pain, dyspnea, palpitation and tachycardia. Pain and dyspnea are distinctive symptoms. Pain especially is an important symptom because it is so typical of syphilitic aortitis. It is frequently the first symptom of which the patient complains and one which calls to his attention the need of medical aid. Early in the disease there may be only a sense of constriction and oppression or weight in the chest with some uneasiness along with slight palpitation as well as some dyspnea. The pain varies from a sense of soreness or tenderness beneath the sternum, to a sharp, stabbing along the upper part of the chest reflected to the right shoulder, to the neck, left shoulder or even down the arm. The pain may be constant or intermittent, at first mild, then increasing in severity and frequency, and seemingly increased by exercise. Sometimes the pain is typical of angina accompanied by a peculiar sensation described by many patients "as if the heart were going to stop" as well as by a consciousness of the near presence of death. Dyspnea is an early symptom generally produced on slight exertion but of such mild character as to be little noticed at first. Three of my patients always complained of their inability to walk in cold air without causing dyspnea. In some cases, the shortness of breath progresses, especially if aortic insufficiency is present. In other cases the shortness of breath is paroxysmal, lasting from five to fifteen minutes and leaving the patient exhausted for some time afterwards. Some of these attacks resemble socalled cardiac asthma although there is no decompensation. Such attacks occur with or without aortic insufficiency.

Palpitation and tachycardia are symptoms that usually occur early. When aneurysm is present, the special symptoms and signs depending upon the location and size of the tumor make their appearance. The most important and most constant single diagnostic aid is a positive Wassermann reaction. Next, in my experience, is the determination of the condition of the aorta itself as visualized by the x ray, especially the fluoroscope.

Physical findings in the early stages of syphilitic aortitis, that is, before the aorta has undergone much pathological changes, are practically negative. Later in the disease when the aorta becomes degenerated, the wall weakens and some dilatation occurs which, on inspection, may be noted by abnormal pulsations in the subclavian and carotid arteries, and also by pulsation in the episternal notch. When there is a marked condition existing, one may detect a heave beneath the manubrium or a pulsation in the first and second interspaces, usually to the right of the sternum, but occasionally, as I have seen, to the left. By placing the index finger in the episternal notch, a pulsation is frequently detected and as previously pointed out, constitutes an important diagnostic sign. Percussion gives a slight dulness over the upper part of the sternum and to the right of the manubrium in the first and second interspaces, depending naturally upon the amount of dilatation present. The aortic second sound is sharp, ringing bell like in quality. Frequently there is a systolic murmur at the aortic area. Aortic insufficiency when present is accompanied by its usual physical signs.

Prognosis depends upon the early recognition of the disease, and the promptness with which specific treatment is administered according to the modern accepted methods. If specific treatment is instituted in time, it will undoubtedly stay the progress of the pathological process and avert the development of many aneurysms. Antisyphilitic treatment must be vigorously instituted and continued over long periods of time in order to be efficacious. Salvarsan or neosalvarsan in full doses every seven to ten days for six doses is beneficial, but mercury is by far the most valuable remedy and should be administered by needle or inunction for courses of twenty-eight doses. Iodide of potassium in increasing quantity should be given along with the above treatment. The Wassermann test should be made before and after each course of treatment. It constitutes a valuable aid in the management of therapeusis, especially when positive. It should be borne in mind, however, that a negative Wassermann reaction does not indicate a cure, and should not be construed as indicative of sufficient medication. Such a course as outlined above should be repeated after rest intervals of a few weeks at a time, until disappearance of clinical symptoms, physical signs (in some cases) and persistently negative Wassermann reaction. In my experience, a plan of treatment as outlined above unless followed over a period of years will not prove permanently beneficial. For the relief of pain, nitroglycerin, one one hundredth grain by needle, and if the paroxysms are severe, hypodermics of one quarter grain morphine sulphate are indicated.

SUMMARY

Aortitis is of fairly common occurrence during the course of various acute, infectious diseases.

Syphilis is possibly the principal cause of aortic inflammatory processes.

The diagnosis of aortitis depends upon the correlation of physical signs, x ray, and clinicopathological laboratory examinations.

The prognosis in aortitis depends especially upon the nature of the infectious agent. In the luetic type, it is especially related to early recognition.

Treatment is symptomatic and supportive except in the luetic type, where vigorous antisyphilitic medication is indicated.

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Treatment of Pneumonia

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The famous clinician, Strumpel, used to say, "Pneumonia usually heals by itself, without any therapy, occasionally in spite of therapy." It might be wrong to allow this quotation to make one an advocate of therapeutic nihilism when facing such a disastrous disease as pneumonia. But there are two conclusions we can draw from this sentence of Strumpel. First, we must be skeptical in interpreting any results of our treatment, and second, we should realize that we are likely to do harm to the patient by our treatment.

It will become evident throughout this paper why the problem of treating pneumonia patients is such a difficult one, and why we sometimes injure instead of improve the patient's condition by therapeutic measures. In an experience with about one hundred cases, which were closely observed in German hospitals and in this country, many different and conflicting ways of treating this disease were demonstrated to me. For instance, one well known clinician used to insist on not giving morphine to a pneumonia patient; while another, equally distinguished, recommended morphine every four hours. Some doctors are using as routine treatment stimulants, as caffeine, and others forcing of fluids to four thousand c. c. a day. Contrary to this opinion, there are doctors who believe in restricting the amount of fluids and in giving caffeine only in emergency.

It is the aim of this paper to emphasize the fact that our first problem is to get rid of any routine treatment. It will be shown that the special condition presented by each patient requires careful individualization. Even the treatment of a single patient has to be varied from hour to hour, according to any changes observed in his condition.

Although my main subject is lobar pneumonia, it will be evident that most of my remarks cover also bronchopneumonia.

When we are about to treat a pneumonia patient, we have to ask ourselves three questions: first, is the patient's life in immediate danger which has to be militated against by therapeutic means? Provided this is not the case we have to inquire, secondly, what can be done to fight the cause of the disease, the pneumococcus, and thirdly, how can we relieve the patient's symptoms? In other words, is the indication for treatment a vital, absolute one, or is it only relative, either etiological or symptomatic? Such a differentiation is necessary since in most cases it is pernicious to continue symptomatic treatment if vital treatment is required, and it is often disadvantageous to continue vital treatment where symptomatic treatment is indicated. For many years in surgery and obstetrics the differentiation of absolute and relative indication has been emphasized. In internal medicine I failed to find any reference in literature to this effectual help in determining therapeutic proceedings. This difference between absolute and relative indication is of the greatest importance, especially in pneumonia.

VITAL TREATMENT

What is the absolute indication? What is the cause of the immediate danger for the patient's life? We all know there are chiefly two conditions responsible for death in pneumonia—cardiovascular failure and anoxemia, deficiency of oxygen in the blood.

CARDIOVASCULAR FAILURE

The toxins of the pneumococcus act on the cardiovascular centre and so cause paralysis of certain capillary provinces, especially in the splanchnic area. This brings about a disproportion in the distribution of blood, clinically seen as the picture of collapse. Much less frequently we see myocardial insufficiency itself, which usually is caused by the great overwork of the heart in consequence of the engorged lungs, or by direct action of the toxins on the myocardium. Seldom are there true pneumococci metastases found in the heart. In acute failure of the circulation, when everything depends on rapidity of therapeutic action, it is useless to start the customary digitalis treatment by mouth. In this event digitalis drugs are effective only if given intravenously, as strophanthin or some glycoside preparations such as digifolin, digalen, verodigen, and others. It must always be kept in mind that any other digitalis medication does not act before the drug has been anchored in the heart muscles and a certain concentration has been reached. It usually requires from one to three days, if given by mouth, and even by the subcutaneous method it takes hours before the therapeutic threshold in the heart is reached.

We know that the most powerful digitalis drug, the most rapid in action, is strophanthin. Thus it is the drug for emergency, but its use in extreme weakness must be guarded. Numerous cases of death following the administration of strophanthin are reported. After reviewing the literature on strophanthin, Rahn (1) advocates that it should not be given if any other digitalis medication was previously administered, if there is evidence of bigeminal pulse or any other irregularity or if there is a complicating nephritis present. He also emphasizes the avoidance of strophanthin in acute myocardial failure, where the heart muscle is without any reserve. The following case has been observed, which illustrates well Rahn's conclusions. In a patient who had suffered previously from myocardial damage bronchopneumonia had developed. Three fifteen minim doses of digitalis and one ampoule of caffeine did not prevent the gradual lowering of the blood pressure and the increase in pulse and respiratory rates. She received one ampoule of strophanthin intravenously for the purpose of combating the cardiovascular collapse. Within one minute after the injection dyspnea, cyanosis, and auricular fluttering developed and the patient died.

The oldest procedure in dealing with cardiovascular failure is the use of caffeine sodium benzoate, camphorated oil, and strychnine. Each drug has its

own province. Strychnine is purely a central stimulant, developing its action on the vasomotor centres. Caffeine simulates strychnine in its central action. On the heart itself it causes a dilatation of the coronary vessels, bringing about an increased flow of blood, at the same time increasing the contractibility of the heart muscle.

About camphorated oil there has been much discussion in the literature. Some workers, Marvin and Soifer (2) and Heathcote Cushny (3), do not attribute to camphor any effect on the heart whatever, while some others give more enthusiastic reports. The reason for this divergence of opinions is the fact that camphorated oil is slowly absorbed and soon inactivated after absorption. Hence the clinical observation of its usefulness is made much more difficult. In order to provide a lasting effect by means of slowing the rate of absorption, some clinicians, Staehelin (4), Deham (5), Schittenhelm (6), Hoseman (7), and others, are using the socalled camphor deposits. They give intramuscular injections of ten to twenty c. c. of a strong twenty per cent. solution and report favorable results. Recently a new way has been worked out, i. e., the intravenous administration, inaugurated by Leo, perfected by the Heidelberg Clinic (Krehl, Gottlieb) (8). They succeeded in producing a water soluble preparation of camphor. This work seems to bring the camphor question into a new light. On account of the slight central effect of camphor it has the advantage of not interfering with sleep, which is not true of caffein and strychnine. During recent years a very effective drug has gained entrance into the armamentarium of the profession, adrenalin. As a heart stimulant it has been given for a long time intramuscularly and intravenously (Jahn, Kothe, and Rosenow) (9). Its intracardial administration was introduced by Van der Velden, Henschen, and Bodon (10) abroad, and by Crile (11) in this country.

The explanation of the pharmaceutical action of adrenalin secured by this latter method is given by Starkenstein, as follows: The stabbing of the heart forms the stimulus for an automatic ventricular contraction, even if the heart beat has already stopped. By this contraction adrenalin is brought into the ventricle and acts on the tertiary centres, developing the revival of their action. As it is carried into the coronary circulation, it restores the primary centres and thus the normal rhythm. Regarding the technic of the intracardiac administration, we have to avoid the different danger zones which are described by Bodon, coronary vessels, sinus node, bundle of His. The area on the left edge of the sternum in the fourth or fifth interspace should be selected for the injection, if heart dilatation is present, a space one finger breadth inside of the left edge of the cardiac dullness. A few points have to be considered in the use of adrenalin as a cardiac stimulant. Adrenalin disintegrates in the blood stream in from five to ten minutes, which explains why one cannot expect a lasting effect and why it is often necessary to further stimulate with strophantine and caffein at once. Pituitrin can be used in a similar way (Cohen) (12). As a heart stimulant it differs from adrenalin chiefly by its constricting effect on the coronary vessels, which are dilated by adrenalin (Morawitz and Zahn) (13). Pituitrin is preferable in cases where abdominal distention, paralysis of the splanchnic vessels, is present.

Everything that damages the heart should be eliminated in cases of cardiovascular collapse. Therefore it is a mistake, in this particular instance, to force fluids by mouth, by hypodermoclysis, by rectal drip or by intravenous injections, which otherwise is a reasonable measure in pneumonia. To continue this symptomatic treatment in the face of the absolute indication we are likely to overtax the circulation and to bring about the last stage of myocardial insufficiency—lung edema. I once saw a colored patient on whom a young physician still continued his routine order to force fluids when the patient was already expectorating frothy sputum.

Another impressive example showing the importance of the recognition for the need of the vital treatment has been observed.

Case I.—Mrs. E. R., forty-seven years old, who had suffered for many years with chronic myocarditis, contracted bronchopneumonia and auricular fibrillation. Besides administering digitalis and opiates, fluids were forced freely, the usual routine measure for pneumonia. Doctors and nurses assured me that the patient would die within the next few hours. After two c. c. of caffein sodium benzoate with restriction of the fluid—intake and restriction of opiates—the pulse could be distinctly felt, which was not possible before, and the blood pressure rose from 52 to 96 within half an hour. With digitalis in conjunction with adrenalin and caffeine for the moments when death seemed imminent her life was prolonged for about three weeks until further administration of stimulants was given up on account of the danger of overstimulation in view of the fibrillating heart.

ANOXEMIA

There is a second condition which forms an absolute indication for treatment—anoxemia. Since this is due to different factors it requires different treatment and should not be combated by routine or standard methods. If we analyze the cause of anoxemia before taking up the treatment, we find that the most frequent type of dyspnea is that which is caused by paralysis of the respiratory centre, due to toxins analogous to and often in connection with cardiovascular failure. We use about the same stimulant measures for reviving the respiration as for the circulation. Adrenalin is an exception, since it chiefly acts on the vascular system. Atropine, however, can be used with greater advantage since it has been proved to be one of the most effectual central respiratory stimulants. Lobelia also, if obtainable in hypodermic form, is of distinct value (Eckstein, Rominger and Wieland) (14). Another type of dyspnea is that of reflex action. The perieheral path of this reflex starts from pleural hyperesthesia, pain or irritating cough, the resulting effect is a paralysis of the respiratory centre (Deham) (5). This type of dyspnea requires analgesics and sedatives. The third cause for diminished oxygen tension in the blood is the deficient expansion of the congested lung, for instance, if there is a great amount of lung tissue involved, as in bilateral pneumonia, or if there is any effusion in the pleural cavity which prevents satisfactory excursion of the lung. The engorgement of the lung may also follow myocardial

insufficiency in consequence of the impaired flow of the lesser circulation.

Especially for this latter type of dyspnea there is one successful therapeutic means at our disposal—venesection. It has been shown nowadays that the old empirical remedy, venesection, will drain any overfilled engorged organ of the body, the congested lung as well as the engorged heart muscle. For this procedure we therefore meet two indications in pneumonia—the lung and the heart condition, and besides it can be considered as a causative treatment directed against the toxemia, because it may aid in eliminating the poisonous substances from the system. It should be mentioned that low hemoglobin and low red cell count is no contraindication to venesection since the anemia in those cases is mostly a relative one, the blood being diluted on account of an involvement of the kidneys. I observed in a few cases that after venesection the red count in the hemoglobin increased in the same proportion as the hydremia lessened.

In some clinics a kind of bloodless venesection is practised—the temporary ligation of the extremities. In this way, large quantities of blood are gathered in the extremities and removed from the overburdened heart and from the lungs. One case has been observed, the details of which may be of great interest.

Case II.—Mrs. F., a case of bronchopneumonia, in whom there developed on the second day of the disease laryngitis, which caused acute laryngeal edema. An intubation improved the patient's condition for a short while, but there was no means of preventing the complete obstruction of the glottis other than tracheotomy. This operation was of benefit for the first day, but one day later heart failure resulted from the double shock of the operation and the pneumonia. The patient was much distressed by the band around her neck, which was applied in order to hold the cannula in position. There was a considerable venous engorgement and cyanosis of the face. In order to make her comfortable, I loosened the band and observed instantly the clearing up of the cyanosis, but the pulse became much weaker and the blood pressure went down. Within five minutes the patient expired. I believe, by loosening the band the large amount of blood which had been accumulated in the head, caused overburdening of the heart and thus produced death.

The other chief measure to save the patient's life in respiratory failure is the administration of oxygen. After ten to thirty seconds the result is noticeable, especially when we use Meltzer's (15) method of insufflation. I am impressed that the best results were obtained in cases with Cheyne-Stokes respiration which often immediately cleared up. Kauders and Porges (16) described a new colorimetric method of determining the degree of anoxemia, with which the value of oxygen in pneumonia is easily demonstrable. In cases of anoxemia secondary to myocardial insufficiency, we can naturally not expect as good results from oxygen as from stimulation of the heart, especially with strychnine and caffeine, which act on both circulatory and respiratory centres.

It has already been mentioned that, if there is evidence of reflex action, pleural pain or irritating cough, causing the dyspnea, analgesics, expectorants, and even opiates are to be resorted to as a lifesaving measure. No other treatment requires as much individualization as this condition, and it cannot be stressed enough that routine administration of morphine for anoxemia is absolutely unreliable. It is experimentally proved that morphine paralyzes the respiratory centre, and manifold clinical experiences confirm this fact (Porges and Kauders (16) and Wassermann, 17). A number of cases have been observed by the writer in which opiates produced definite Cheyne-Stokes respiration instead of obtaining the desired effect of diminishing anoxemia, because the indication for the relief of this type of dyspnea was stimulation rather than depression.

CAUSATIVE TREATMENT.

We have been discussing so far the needs for emergency treatment, the absolute indication. There is, however, a great province for the measures of the relative indication, etiological and symptomatic treatment, provided they do not conflict with the lifesaving therapeusis.

Pneumonia is a disease caused by germs and by their toxins. Everything antagonistic to either one of them, is worthy of consideration in the treatment. In other words, to kill bacteria, or at least to attenuate their virulence, to decrease the amount of poisonous products and to improve the resistance of the organism, are the ways to accomplish this aim. Everybody is familiar with the benefit of the serum treatment based on the experiments of the Rockefeller workers, Cole, Avery, Dochez and Chickering, (18), and of Cecil, (19), and Conner, (20). The anti sera for types two and three failed to be satisfactory; for type four a serum has not yet become available, but in type one cases definite success has been widely recognized. In Cole's reports the mortality rates decreased from twenty-five per cent. to ten and one half per cent. Thomes reports two hundred and fifty cases with twelve and one half per cent. mortality (18).

It has not yet been clearly demonstrated that a good deal of the effect of serum treatment is due to the plain action of foreign proteins as seen in so many other infectious diseases. (Herrick, 21). Friedman, Von de Velde, Veubel, and Bettinger are having some success with horse serum. Schurer and Eimer (22) treated about twenty-four pneumonia cases with casein and milk, and claim to see a similar influence on the course and mortality of the disease as others with serum treatment. These questions have not been entirely solved, neither are the experiments with the pneumococci vaccine yet satisfactory. (Cecil and Vaughan, 23.)

Morgenroth and Levy discovered the drug optochin, the ethyl hydrocupreine which has been proved a pneumococcocide *in vitro* and animal experiments. Clinically it is of value only in the early stage of the disease. Fever drops, and the curve assumes a lytic form. Because of the ease with which poisonous symptoms, especially amaurosis, occur, the doses must be cautiously gauged.

Moore and Chesrey are of the opinion that there are sometimes opotochinfast pneumococci, which are responsible for the occasional failure of its action. There are more optimistic reports on the intramuscular and intravenous use of quinine which is ad-

ministered in conjunction with urethan, as it dissolves very readily in this substance. Ten c. c. of ten per cent. solution were originally recommended by Aufrecht and Cahn (7). Cohen (12), uses quinine dihydrobromide and calls this "the best agent at present available." Barker (24) advises on this subject the use of quinine and quinine products, but, at the same time, evinces skepticism in interpreting their value.

Camphorated oil is also regarded as a specific drug against pneumococci. Animals have been saved by camphor injections after artificial pneumococci infections which produced death in the controls. (Leo, Walk, Boehnke, 4). Klein (24) claims that this action of camphorated oil is brought about by a dilation of the lung vessels. This results in an accumulation of leucocytes, the carriers of ferments which absorb the infiltration during resolution.

All these specific means should not be used collectively. We always have to balance indication against contraindication: e. g., if the heart is low and the fever high, we should not start serum treatment, keeping in mind the danger of further hyperpyrexia. On the other hand, one or two intramuscular injections of quinine or one of its preparations depress the temperature. After three or four days' sickness we should not expect anything by instituting specific measures. For the use of nonspecific protein the greatest caution is always indicated.

In speaking of causative treatment we have to consider the value of elimination. This forms a great aid in treatment according to the clinical experience of many authors. However, I was unable to find an experimental support to uphold this opinion. Cornwall (25) observed a mortality of 30.6 per cent. when he used artificial evacuation of the bowel, against 18.8 per cent. where he did not exert the patient by evacuation.

Regarding forcing of fluids—there cannot be any objection in this as well as in so many other infectious diseases, provided we know when to stop. As stated above, the heart is easily subject to failure in pneumonia and lung edema is the result of exaggerating this measure. We see that the patient generaly desires fluids, and I have learned that this desire is a good measure for the amount which the patient ought to take. In giving saline or glucose solutions by hypodermoclysis or intravenously, besides the administration of à certain amount of fluid to eliminate bacteria or toxins, another factor has to be taken into account. It has been attempted to show that it is the osmotic effect of these solutions which makes them valuable; Meyer and Handovsky (26) proved in extracting the cholesterol amount of the blood plasma that there are definite changes in its colloidal quality to which the excellent effect of the parenteral injections of crystaloids is to be attributed. It is observed that especially high percentaged solutions, forty to sixty per cent. glucose, (Litchfield 27), or ten per cent. sodium chloride are of great benefit.

SYMPTOMATIC TREATMENT

We now have to deal with the third mode of treatment, the means for relief of the patient's symptoms. Most of these methods are very useful and some of them not harmful to the patient. However, in case of emergency they have to recede before the other more important measures. Of outstanding value amongst this group are prophylactic doses of digitalis, since this drug is likely to prevent serious heart complications. There is much discussion in the literature regarding the advisability of giving digitalis, but if it is used in reliable quantities it can hardly do any harm and might be of great benefit to the patient. Levy (28) published the interesting observation that heart enlargement in pneumonia is much less frequent if digitalis has been given before, and this is without doubt an objective argument for its administration.

More complicated is the question of giving opiates. In order to increase the patient's resistance, it is certainly necessary to have him at complete rest, and to relieve his pains and his cough. Kraft and Leitch (29), Reynolds (30) and others, however, demonstrated on rabbits, after administration of opiates, a definite lowering of the body resistance against infection, inhibition of phagocytosis, increase of intestinal stasis, general depression of metabolism. It is a well known fact, that in distinction to all other hypnotics and analgesics, opium and its derivatives are the only ones which act first on the medulla before exercising their depressing effect on the sensory brain centres. (Meyer and Gottlieb.) However, it is sometimes impossible to treat a pneumonia patient without giving opiates. How can we find a way out of this dilemma? Often pains can be relieved by phenacetine, pyramidon and the salicylates, which are especially useful if there is also an indication to lower the temperature. Sometimes, however, we need opiates and then we have to decide just which drug to use. In case of excessive pains we have no other remedy than morphine, but it should always be combined with atropine in order to counteract depression on the medulla. For restlessness pantopon is without doubt the most effectual opiate, since it consists of the five alkaloids and is free from the harmful superfluous bysubstances of the opium. Its content of narcotine especially diminishes its depressing action on the medulla. Morphine itself is no drug for combating restlessness or delirium since its action on the motor centres is preceded by paralysis of the sensory and medulla centres. (Meyer-Gottlieb). In extreme delirium where too large doses of opiates would be required, hyoscine is preferable, since being related to atropine we can ever attribute to it a slightly stimulating influence on the respiration, whereas the higher brain centres, especially the motor, are paralyzed more extensively. The difficulty of attaining a balance between depression and stimulation is illustrated by the following case.

Case III.—Mrs. K., a Polish woman, with bronchopneumonia, which followed childbirth, there developed on the sixth day of the disease violent delirium. She threshed about the bed and wore herself out; fever over 104°, blood pressure below 80. She succeeded in leaving the bed and attempted to leave the room, even after one third grain of pantopon. No persuasion was possible. Five nurses were necessary to hold her in bed until an injection of hyoscine relaxed her completely. As a result of her great exertion and of the artificial depression this patient became completely exhausted and there developed

signs of myocardial insufficiency which required stimulants.

Even in the apparently simple procedure of allaying a cough, we have to individualize. There are two different modes of combating cough, first to stimulate the bronchial membranes and to dilute the secretion in order to procure its elimination. Second, to diminish the expectoration, which can easily be done by the action of codeine on the cough centre in the medulla. Most expectorants, like ammonium chloride, turpentine, menthol, eucalyptus and ipecacuanha have been demonstrated to act in the first way. For the second indication codeine has been proved as the best remedy, its depressing effect being one twentieth that of morphine, and being much less harmful than heroine. The old way of prescribing a mixture of ammonium chloride plus codeine is, at least from the viewpoint of experimental pharmacology, something impossible, since the agents are antagonistic to each other. If there are good clinical results observed, they are due to one or the other. In loose cough with a great amount of expectoration the simple method of elevating the foot of the bed has been advocated by Rautenberg (31), and is, without doubt, a great relief, provided it does not interfere with the general condition of the patient.

A word about the open air treatment in pneumonia! Since about 1900 this treatment has been established, chiefly in this country, as a result of clinical experience (Northrup), little experimental work having been done. It always has been taken for granted that the sole remedial effect in open air treatment is oxygen, until careful studies in recent years have disproved this idea. Russell, Lee and Hill, (32) have brought forth proof of the fact that the value of open air depends largely on its temperature, humidity and movement, its effect in relieving heat stagnation in the body and in lack of cutaneous excitation.

In most houses and even in hospitals we have, in winter, a temperature of over 75° with nearly absolute dryness. I have often wondered if this condition is not one of the reasons why pneumonia is such a frequent disease in this country, and why the mortality from pneumonia in Germany is much lower than it is here (Brooks) (33). We have to consider that people living in overheated houses are facing a marked difference in temperature as soon as they leave their homes, during the winter months. It is not yet definitely proved that the virulent types of pneumococci may not develop from the harmless dwellers of the mucous membranes in the throat. Cole observed, in fifty per cent. of all pneumonia cases infection of the pharynx. Possibly, the ill effect of the dry and hot air on the mucous membranes is one of the chief exciting causes. It therefore follows that open air treatment is commendable if we see a pneumonia patient in such an overheated home or hospital. However, just as much harm can be done in exaggerating this measure. If a patient has 104° fever, or if he is perspiring heavily, we should not expose him to a draft. Regarding moisture, most German clinics use steam in the form of bronchitis kettles, this being a very good protection against dryness. Brooks states that physicians practising in the tropics advise us that their patients do very much better in a warm atmosphere than in cold.

One of the oldest methods is local applications. The term usually used in explaining their action is counterirritation. Irritation means hyperemia and pain, stimulation of sensitory nerves. This latter factor is effectual in procuring a reflex action on the centres of the medulla oblongata and experiments (Roy and Sherrington) proved that an increased blood pressure and a redistribution of the blood is brought about by this reflex. Many clinicians (Huebner and Goldscheider) used such methods as mustard poultices or mustard baths. Against the old, obsolete means which produce any lesion of the skin, such as mustard plaster, cantharides plaster, and others, one must be warned (Brooks). I recall a patient, Mrs. F., who came into the hospital with a most terrible skin infection caused by mustard plaster. If the doctor had seen such burns on otherwise healthy patients he would at least have consulted a specialist, but here he did not even think of bandaging it. The patient became restless on account of this lesion. I saw another patient, Mrs. W., treated with leeches. The physician was unable to control bleeding for two days. The only effect was to lower the patient's resistance markedly. Venesection would certainly have been a much more physiological mode of withdrawing blood.

SUMMARY

1. The importance of the absolute and relative indication in the treatment of pneumonia is emphasized. a. For emergency, it is first necessary to analyze the cause of the present condition—either cardiovascular collapse, or hypoxemia. This analysis should lead us to the treatment, which is absolutely indicated—chiefly stimulation, oxygen, venesection and, in a few cases, opiates. b. The relative indication extends to the measures for specific and symptomatic treatment, i. e., preponderatingly serum administration, elimination, avoidance of dry, dull air, prophylactic digitalis and occasionally sedatives.

2. Frequently some of the second measures interfere with the first ones, which must be carefully deliberated.

3. Routine treatment in pneumonia is never justified and might even accelerate death. This is especially applicable to the indiscriminate use of opiates and the administration of fluids.

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322 PROFESSIONAL BUILDING.

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The Atomizer in Nose and Throat Work

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So important is the use of the atomizer in the successful treatment of nose and throat conditions that it is surprising so little of value is to be found concerning it in current literature and textbooks. Even postgraduate instruction in nose and throat work pays insufficient attention to the choice and selection of the necessary atomizer, nebulizer, steam vaporizer, douche and solutions. The subject is of growing importance because of instrumental improvements and the need for definite instructions from doctor to patient so that none but the best results are obtained.

Unlike most other conditions, it is in nose and throat work that the doctor depends on the patient's cooperation as compared with other treatment where the patient's intervention is absolutely prohibited. Is is, therefore, all the more necessary that explicit instructions be given the patient in getting the proper atomizer, nebulizer, steam vaporizer or douche, the proper solutions to use, and when and how. It is a fair question to raise, is not the medical profession losing much in both prestige and financial return by neglecting to devote the necessary time, thought and work to give the patient that relief for which otherwise he seeks the drugless healer?

We intend a study of the mechanics of the atomizer as a generic term rather than the therapeutics of nasal treatment. This will include the atomizer, nebulizer, nasal douche and steam vaporizer. It seems almost necessary to begin with a paragraph on definitions with the possibility of a subsequent paper on applied therapeutics. Here we would say that possibly nowhere in treatment is it more important to observe the first law of applied therapeutics—do no harm. This is fundamental to the best success.

There is a distinction between the cotton wrapped applicator, as generally used by the doctor alone, though occasionally by the patient, and the other instruments used between office visits even more often by the patient himself. The word atomizer suggests an instrument for applying the medicated solution, oily or aqueous, in minute particles as small as an atom. Of course, such is not the case, so poor is our language, but the thought is a fine subdivision of the remedies selected. A nebulizer differs from an atomizer. The nebulizer is used only for oils and produces a vapor instead of a spray. The rubber bulb pressure in a nebulizer produces a spray inside the container and this spray being volatile gradually vaporizes and passes out of the opening in vapor form. On the other hand, a douche differs in two ways in that it is used as a cleansing agent only, therefore always aqueous and capable of dissolving mucus and always in considerable volume as compared with the spray of an atomizer which may be aqueous or oily. Of course, atomizers are used considerably by both patient and doctor for cleansing purposes.

A word of caution relative to the nasal douche should be given here. It is frequently seen that the ease with which a large volume of solution may be used actually invites trouble, as the solution often enters the Eustachian tube. Instruct your patients in the proper use of the nasal douche, not to throw the head too far back, or better, suggest the use of the atomizer as equally efficient and devoid of this danger.

Atomizers and nebulizers are used by the force of pressure generated either by the rubber hand bulb or an air pressure pump. The steam vaporizer is in common use and most effective for good. With it either an oily or an aqueous solution can be used producing a warm medicated vapor for inhalation, particularly beneficial in the treatment of croup or deep seated bronchial inflammations. The steam vaporizer differs from a nebulizer in that it is operated by an alcohol burner with a wick and the upper container is partly filled with water to which can be added either an oil or an aqueous solution, gum camphor or menthol. Steam is produced and in its exit it carries with it the medication.

Due consideration must be given to the character of the condition to be treated, whether acute, subacute, or chronic. This will determine both a different period of treatment and a studied selection of remedial agent.

To affect the tissues for good, the direct application of sedative, antiphlogistic or protective remedies must be made and this can only follow the cleansing solution by douche or atomizer. Care must be exercised not to harm the mucous membranes by a too harsh contact. The force with which the solution meets the tissue is regulated by the height of the douche bag or the air pressure in the atomizer, either hand generated or by a pump. The direct and immediate effect must be natural or soothing, remembering that the congested area does not have the power for recovery as in tissue with a normal arterial and venous blood supply. The patient must be properly instructed, as extremely gentle contact is conducive to the best results. Foghorn blowing of the nose is certain to engorge the erectile nasal tissue and do more harm than the presence of the increased mucus.

Postoperative anesthesia is always desirable and for both the surgeon's reputation and the patient's comfort, the one dependent on the other, it should be used only after attention to the nasal or throat toilet to insure anesthetic contact. There is no question that full drug action is delayed or prevented by distance betwen tissue and anesthetic. Remove the mucus, foreign body or pus, and immediately apply the anesthetic and the subsequent mucus flow will not increase the discomfort.

We must consider further that laity selfmedication is just as often the reverse of the faulty douche method just referred to, when the oily, protective solution is applied direct to the mucus without first using the aqueous douche. One method is harmful; the other is useless. When the public is so familiar with the word catarrh, even though not fully knowing its meaning, it will pay any doctor to

offer an intelligent, studied method of treatment with full consideration of the importance of the condition which has a definite meaning to the patient.

So much for the cleansing value of the nasal douche or atomizer. As applied to throat work it means the mouth wash and the gargle as well as the atomizer, with the same studied use of selected solutions with full realization of the functions to be performed.

Mention should be made of temperature, as this has a distinct bearing on the end results. Naturally a hot nasal douche or gargle has more solvent power than a cold solution. But where there is obstruction to the return venous channels this might result in further congestion. Generally speaking, a hot nasal douche should be used only in the dispensary or office where immediate local deobstruent treatment can be given. Neither is cold salt solution always effective for good. The continued cold air of the out of doors is less harmful than the alternate cold and hot of the cold douche and subsequent room temperature. Blood heat, meaning normal body temperature, is the choice under ordinary conditions.

It has been suggested above that all nasal cleansing should be followed by a protective antiseptic or anesthetic solution, preferably oily, and this covers the only functions to be considered as follow up treatment. Here is where proper selection must be made for both home and office use. We consider this most important.

Where dichloramine-T is used we require an all glass instrument. The solution should be made up in a small quantity extemporaneously and tested for acidity. If found to be acid it should be neutralized with dried sodium carbonate. An atomizer with a metal tube should not be used but one with hard rubber parts has been shown not to cause appreciable deterioration of the solution. The best protection is the extemporaneous neutral solution.

Following turbinate and sinus work it is essential to treat only the limited area affected. Contact of the solution with the surrounding healthy tissue does no harm, but there is no advantage in wasting medicine. Therefore we suggest the instrument with an adjustable tip so that the spray may be directed up, down or straight ahead. Such instruments are on the market and are a decided convenience.

As now furnished, atomizers may be used for either aqueous or oily solutions, but care should be taken to cleanse and dry them in changing from one solution to the other. The careful operator always has the advantage over the careless, and it pays well to give any necessary attention to insure scrupulously clean atomizers. This is equally true of those with metal parts, as of those which are all glass. We have observed incrustation on atomizers in use in large hospitals and poor or worse results in treatment following their use.

To produce a satisfactory spray or vapor the solution must flow reasonably freely and be able to pass through a very fine tube. Oils of high viscosity must not be used. In fact, they cannot be used, as they require entirely too much force to be sprayed. The same heavy oil that meets the needs of a motor does not cover our requirements for a nebulizer or atomizer, just as all inks are not suitable for your fountain pen.

We must not expect the instrument to do the impossible, but starting with a well selected oil of suitable viscosity we have much of advantage in the successful treatment of the nose and throat as offered by those perfected instruments now available.

In closing, permit a suggestion that more attention be paid to nose and throat work. Patients like to do something. Also, they like to have something done. The policy of watchful waiting for a named diagnosis is meaningless to them. Do something. Give them any necessary local treatment and instructions for their own cooperation in home treatment follow up, and much can be done both as a benefit to the patient and a reputation builder for you.

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Focal Infection and Arthritis*

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At the Presbyterian Hospital the nose and throat department made an intensive study of three hundred patients on focal infections, with special reference to arthritis, our idea being to ascertain if the patients suffering from arthritis had any definite foci, and if so, where they were most frequently situated.

In the ear, nose and throat section we made repeated examinations by the pharyngoscope, the x ray and transilluminations, to determine definitely which tonsil or which sinus was affected. In a group of two hundred cases of arthritis I found that over two thirds of the patients had diseased tonsils, and twenty-five per cent. had sinusitis. By diseased tonsils, I mean tonsils which had caseous deposits protruding from the crypts, coupled with hypertrophy; or tonsils which had encysted abscesses and were markedly hyperemic.

This large number of diseased tonsils in arthritics is certainly a strange coincidence, or a valuable symptom. The question naturally arises, how are they related to the cause of arthritis? The next most common nose and throat lesion was sinusitis, over twenty-five per cent. of the two hundred had pus in their nares or postnares. The striking part of this was the frequency of the posterior set of cells being involved, forty-five occurring in the posterior ethmoids or sphenoids. Obstruction of the nose in the various deviations of the septum were almost as great, being almost twenty-five per cent.

This is important to the rhinologist, as sinusitis

*Read before the Philadelphia Laryngological Society, May 6, 1924.

was found in so great a percentage of these arthritic cases. The teeth were only grossly involved in ten per cent. of the patients. By that I mean objectively decayed roots, unfilled cavities, pyorrhea, or calcareous deposits covering the teeth. The ears were so seldom involved, as to be considered almost nil as a factor. In this series I have divided these patients into the acute and chronic arthritic cases, and the latter I have subdivided into those who can and cannot walk.

In twenty cases of acute rheumatism, I found fifty per cent. of the patients had diseased tonsils, and twenty-five per cent. had sinusitis. None of these had bad ears, or teeth.

In forty-nine cases where the patients were unable to walk the percentage of tonsil trouble was even higher than in the acute cases, for seventy-five per cent. of them had diseased tonsils. In four of these cases, wonderful results were obtained. For instance, Mr. K., bedridden for two years with painful arthritis, had a small pair of diseased tonsils which were enucleated, and he immediately began to improve, and now, four years later, he is walking around an advocate of tonsillectomies. Mrs. B., a hopeless bedridden rheumatic who used a dozen handkerchiefs daily, had a radical Killian, a modified Killian and two Caldwell Luc operations performed before she was cured; and now, three years later, she is rejoicing in her ability to walk everywhere. These examples are likely to make one think all can be cured by these methods, but here comes the strange part, twenty of these forty crippled patients, or fifty per cent., had had tonsillectomies without any appreciable improvement in their ability to walk, or use their hands and feet.

Of course these are all badly crippled patients, some of them unable to feed themselves, unable to walk and some unable even to lift their bodies out of bed without assistance, so far advanced are they with ankylosis of the joints.

These deposits are so thick as to make one lose hope for even an ultimate absorption; it is doubtful if anything will cure them. Their worst symptoms are intense pain with sleeplessness. These complaints were alleviated, and in most cases cured by either the operation, or the treatment which Dr. Pemberton instituted, or the combination of operation and treatment. In another set of chronic patients, of ninety-seven who were able to walk, forty-five had diseased tonsils, and twenty-eight had sinusitis, and twenty-five per cent. had deviated septa.

In these arthritics, the chief complaints were sore throat and postnasal dropping. In the earlier arthritic stages, the tonsils were acutely inflamed or hypertrophied; or the sinusitis patients' discharges were more mucoid, or of a mucopurulent character. In the more advanced stages of arthritis, I noticed the secretions were more purulent or the crusting was more pronounced. The patients in the advanced arthritic stages have a peculiar mousy odor to the breath which is typical of an arthritic patient. It is not a stale breath, nor the breath of the alcoholic habitue. I have never noticed a breath like it except in arthritics. Their mouths and throats are glazed even though they do not have a high temperature, and I concluded it must be some change in the blood which makes the mucosa so dry.

That we might properly judge the value of these arthritic findings, let us consider the patients in one hundred cases of consecutive admissions to the hospital medical wards, and consult their diagnostic cards, the prevalence of nose and throat and mouth conditions in these patients. Of the one hundred patients, sixty per cent. had infections of the nose and throat, fifty-eight per cent. had dental infections, and thirty-four per cent. had genitourinary infections. In the nose and throat infections, the largest number, forty-three, were diseased tonsils, and thirty had sinusitis. These findings were made in patients who were admitted complaining of heart and kidney conditions, and other affections. In these hundred patients, fifty per cent. had a leucocytosis and twenty-five per cent. had anemia.

The most frequent diseases were nephritis, or myocarditis, or a combination of the two. There were many other diseases such as pneumonia, bronchitis, epilepsy, acute rheumatic fever, heart block, perinephritic abscesses, hyperthyroiditis and other conditions. These patients came to the hospital seeking relief for a wide variety of symptoms, the routine examinations bringing to light the fact that those diseases were combined with or due to other ailments, some of which may have been the exciting cause of all their troubles.

It is again significant to find in these hundred cases so many nose and throat complaints, sixty per cent. having nasal and throat diseases. Therefore may we not say that the nasal mucosa, or the tonsils, are many times the entrance for, or exciting cause of, many of our common diseases? Possibly you may think they are only secondarily involved, and quite apart from the disabling disease. While I know that an excess of carbohydrates will increase, or aggravate arthritis, I am of the opinion it is not the sole cause. I believe worry, exposure to cold, overwork plus lowered resistance afford the opportunity for some change to take place in the body metabolism, whether it is a bacterial invasion from some foci of infection or some chemical change in the blood; these are problems which we are trying to solve. I know Dr. Ralph Pemberton has been unable to find bacteria in the joints or fluids of these arthritics, but may that not be due to our technic? Koch could not find tubercle bacilli in a chicken's blood because its body temperature was 104°, but he could in a rat's blood, because its temperature is nearer the human.

In the tonsils examined microscopically and cultured the bacteriologist, Dr. Eiman, reports the great majority of tonsils as showing diffuse suppurative tonsillitis, and the most common bacteria being in the following order: 1. Streptococcus nonhemolyticus; 2, Streptococcus hemolyticus; 3, Streptococcus viridans; 4. Staphylococcus aureus; 5. pneumococci, and 6, bacillus proteus.

Possibly these bacteria may secrete a poison which circulates in the blood or serum, even though the bacteria are not actually present in the tissues in sufficient numbers to be found when an arthritic joint is tapped.

CONCLUSIONS

In concluding I would emphasize:

1. The large percentage of deceased tonsils in this

series of cases raises the question as to whether they may not be a deciding factor. Judging by the acute cases with the large number of tonsil diseases, the tonsillitis may be an early factor which escapes recognition. Possibly the bacteria entering and lodging in the tonsil, or passing through, become active and virulent when bodily resistance becomes sufficiently lowered. Tuberculous experiments on the common sewer rat were without result, until his bodily resistance had been lowered by excessive exercise, fatigue and a starvation diet; then he became an easy prey.

2. In the more advanced chronic cases I believe the bacteria have done their worst and the tonsil removal comes too late. Of course all arthritics do not have discoverable nose, throat, teeth or ear lesions; on the contrary, I can show you many patients with chronic sinsusitis and diseased tonsils who never show any symptoms of arthritis.

3. The large percentage of sinus disease cases in this series is another noteworthy symptom. I think it is worthy of further study, especially in view of the fact that many of these patients have an acute rhinorrhea, whenever they overindulge in sugars, tobacco or overwork.

4. The great rush to extract all teeth in these poor patients I think should be discouraged. I have seen many of them with every tooth gone, unable to masticate properly and not a bit improved, old before their time, hopelessly discouraged. I think it a great mistake to remove all the teeth in these advanced arthritic cases, unless they are grossly diseased. Certainly the indiscriminate x raying and extraction by inexperienced operators, is bound to bring the profession into disrepute unless it is promptly stopped.

5. The indiscriminate tonsil removal is also bad, although their loss is not the hardship on the patient as the loss of all his teeth. In the earlier stages of arthritis, removal of the tonsils may be the deciding factor in starting the patient on the road to recovery; in the later stages of arthritis, I question its advisability.

6. The resulting shock of any operation in these hopelessly crippled arthritics is many times the straw which breaks the camel's back, their nervous system being overwhelmed by the surgical shock plus their added exhausting disease. If operation is indicated, it should be done early and after a period of building up.

I am indebted to Dr. Pemberton, Dr. Talley, Dr. Thomas, Dr. Anigier, Dr. Sailer and Dr. Goodman for the privilege of seeing these patients, and making the collection of these case reports.

2015 WALNUT STREET.

Prophylaxis of Eclampsia*

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The progress of modern medicine today is toward the prevention rather than the cure of disease and eclampsia certainly presents a most fertile field for prophylaxis. Acute cases of eclampsia without any premonitory signs are rare and a great majority of cases develop insidiously for a period of weeks.

Rational prophylaxis must be based on a definitely known etiology but unfortunately, as the origin of the disease is still a mystery, we are compelled to apply our preventive measures empirically. Numerous scientists have contributed various speculative theories as to the causation of eclampsia and no sooner is one presented than it is disproved, hence this malady with its symptom complex is called "the disease of theories."

In spite of this fact in recent years much has been accomplished in reducing the percentage of eclampsia with its resulting mortality by proper prenatal care, watchful waiting and frequent special examinations. As this complication occurs only during pregnancy, we assume that the preeclamptic toxemia is due to increased metabolic changes with an accumulation in the maternal blood of the waste products from the fetus or placenta.

To a great extent these underlying clinical facts occur in the early stages of normal pregnancy in a mild form, characterized by nausea and vomiting and other general constitutional disturbances. As the pregnancy advances, and if protective elements are not developed in the patient's circulation, the untoward classical symptoms of preeclampsia, namely, headache, vertigo, high blood pressure, edema and visual disturbances will be precipitated. Keeping this viewpoint in mind one may conclude that there is only a difference in degree between physiological and pathological pregnancy. Every gravid case, therefore, should be looked upon and managed as a potentially eclamptic case.

Certain facts stand out prominently with regard to the predisposition of eclamptic patients. Primiparæ, well nourished and of the plethoric type, are more often affected than multiparæ—pronounced increased intraabdominal pressure in multiple pregnancies and in hydramnios are generally assumed to be predisposing factors; as a rule the increased metabolic disturbances manifest themselves in the later months of gestation.

Various investigators classify the eclamptic state into renal and hepatic types. Those cases in which there is impairment of kidney function predispose the renal type, and those cases with increased intraabdominal pressure and edemas the hepatic type. The clinical picture and symptomatology, however, are the same in both types; hence the difficulty in differentiation. We can, therefore, assume that the increased metabolic changes which take place in the pregnant state are aggravated by overdistention and renal insufficiency, this giving rise to toxemia, as the result of an organic poison liberated by the fetus or

*Read before the Eastern Medical Society, April, 1924.

placenta. This toxin, however, being still undiscovered renders etiology mysterious.

Recent investigators, who advocated the disturbances of the nitrogen metabolism in toxemia with changes in the composition of the urine, have swayed toward the microchemical studies of the blood, attempting to prove the etiology by the retention of the nonprotein nitrogen; their results have not been uniform.

Killian shows that the chemical changes in the blood of nephritic toxemias are typical of the impairment of kidney function in general. There is an increase in the nonprotein urea nitrogen and more than fifty per cent. of nonprotein nitrogen is urea. He found analogous changes in the blood of hyperemesis, postpartum eclampsia, and eclampsia with gravid uterus. The nonprotein nitrogen is markedly increased, whereas the urea nitrogen is at a low normal limit or decreased fifteen to thirty-eight per cent. of nonprotein nitrogen. Cases, however, have been reported by other investigators of high urea retention in the socalled true hepatic type.

The placental theory described by Weichard declared eclampsia to be an anaphylactic cramp. This theory has received the support of many authorities. Zweifel in 1921 by injecting fetal and placental albumen of one animal into another animal of the same species showed that this did not cause any irritability. Thus these tests upset the theory that eclampsia was the anaphylactic reaction of fetal or placental albumen.

The glands of internal secretion play an important rôle in a normal pregnancy, especially the thyroid gland, which frequently becomes enlarged. The studies of eclampsia in relation to the disturbed internal gland function has been a subject of great discussion. Conditions which cause a hypofunction of the thyroid gland in pregnancy would cause increased metabolic disturbances. Many authorities have concluded that the bacterial toxin elaborated in the alimentary canal are absorbed in the blood and carried to the thyroid apparatus on which they act injuriously and cause insufficient hormone production.

A view advanced by Hunter was that this endogenous product of metabolism enters the cerebral spinal fluid through the choroid plexus irritating the central nervous system and producing the condition of eclampsia.

In his recent studies on the parathyroids Massaglia concludes after extensive experimentation that the parathyroids neutralize the waste products of metabolism retained in the circulation. If there is a parathyroid hypofunction the substance that is not converted by the parathyroid goes to the kidneys, but these catabolic substances easily injure the renal tissue which later cannot eliminate the poisons from the body, eclampsia being the final result. Under those circumstances he concludes from a prophylactic viewpoint that the administration of parathyroid extract will fortify the parathyroid glands and increase their power to eliminate the poisons.

A recent rational theory advocated by Zangemeister, which has received serious attention, is the hydrops gravidarum which is based upon a capillary injury followed by an accumulation of water in the tissues. At first there is a preliminary stage of mild edema followed later by severe swelling, especially in the legs. The first stage of pure hydrops is associated with diminished kidney function without albuminuria; the body weight is increased but the blood pressure remains normal. In the second stage a nephropathy with albuminuria occurs, the quantity of urine is diminished and body weight increases still more. At this stage the blood pressure rises gradually until the third preeclamptic stage—headaches, vomiting, visual disturbance and marked hypertension—is followed by eclampsia.

In the management of obstetrical cases prophylactic measures should be taken long before the patient reached the socalled preeclamptic stage. It is advisable for the attending *accoucheur* in every case of pregnancy to inform the patients of the advisability of prenatal care (hygiene of pregnancy, limited good food, fresh air, moderate exercise, attention to the teeth for foci infection and also to the organs of excretion and elimination). We must pay special attention to the symptoms of metabolic disturbances which cross the borderline from physiological to pathological pregnancy.

Practically all pregnant women in the later months of pregnancy suffer from slight edema, especially of the lower extremities, and this is usually attributed to the enlarged uterus pressing upon the pelvic veins. If we find a slight diminution of the urinary output, a rising blood pressure with a slight trace of albumin, even in the absence of toxic symptoms, I consider this a borderline case.

Visual disturbances associated with headache and vertigo must receive careful attention and it is advisable to have the eyegrounds examined by an ophthalmologist for changes in the retina; negative findings of albuminuric retinitis do not rule out this condition as being toxic.

To guard against further trouble, we must recognize the following essentials:

RESTRICTIONS OF FURTHER METABOLISM

Diet.—In normal pregnancy the diet should be limited to one poor in protein as it is essential to relieve the work thrown upon the kidneys by the added burden of pregnancy. If there are any disturbances in metabolism characterized by edemas or nephropathies and increased body weight, one should advise a nonprotein diet altogether—with the reduction of solid food and milk as the basis of general diet. Interesting observations were made in Germany during the war with regard to the diet. The number of cases of eclampsia was markedly decreased as the diet was poor in fat and protein; cases with pregnancy nephritis, which usually predisposed to eclampsia, were favorably influenced by the so-called war diet with marked decrease in the occurrence of eclampsia.

I made some interesting personal observations with regard to the diet in some of the largest clinics in Berlin from November, 1922, to March, 1923. In the clinics with large obstetrical services, there were no cases of eclampsia. The general diet of most patients consisted of vegetables rich in calcium. During the Easter holidays of the same year eclamptic cases were brought into the various clinics. On investigation I found that during the holidays they

permitted themselves a more liberal diet. These observations have a tendency to prove that there is a marked relation between eclampsia and diet, and that a nonfat and nonprotein diet is a valuable prophylaxis in eclampsia.

Edema.—An important element in the prevention of eclampsia is the treatment of dropsical conditions; slight edemas with retention of chloride in the blood with increased bodily weight should receive immediate attention. To combat edemas we must limit fluid and solid diets and if the tendency to edema is increased, a stricter enforcement of the moderation in fluids combined with daily rest hours. Excessive exercise should be avoided; if there is no response to this treatment, absolute rest in bed on a limited milk and vegetable diet should be advised.

Blood pressure.—Increased blood pressure should be regarded as a serious accompaniment of the preeclamptic state especially when associated with edema. The individuality of the patient must always be taken into consideration especially when we deal with vigorous plethoric stout patients, for in these cases we usually have a high blood pressure in the nonpregnant state. At all events a rising blood pressure systolic 140 to 150 is an indication for rest, a salt free and lactovegetarian diet. If after a reasonable time the pressure does not drop, absolute rest in bed and milk diet should be prescribed as prophylaxis. If this hypertension is not relieved by this treatment more energetic means must be resorted to as venesection.

The use of drugs in my experience has had no effect upon reducing blood pressure.

ELIMINATORY PROPHYLAXIS

This consists of the proper attention to the intestinal tract, skin and kidneys. Constipation being a frequent complaint, especially in the later months of gestation, this must be corrected, for autointoxication gives rise to toxic symptoms. After correcting the diet we may resort to the milder form of catharsis, strong cathartics should not be advocated and rectal lavage should be resorted to in the event that the mild cathartics are not effective. Elimination through the skin should be encouraged by daily warm baths taken on retiring.

Excretion through the kidney should be encouraged. From time to time the patient should be instructed to measure the amount of urine excreted. They should normally excrete from thirty to fifty ounces in twenty-four hours. A marked diminution should be noted and reported to the physician. Water being the simplest diuretic should be drank freely providing there is no edema. Urine examinations with regard to albumin, indican, and diacetic acid should be made.

In the event that the prophylactic measures as regards diet, excretion and elimination fail to alleviate the toxic symptoms, especially when associated with high blood pressure, it is advisable to terminate the pregnancy. The initial convulsion should by all means be avoided.

Before concluding I wish to make the following statistical report of cases which occurred in the services of the Jewish Maternity Hospital. Out of twenty-one thousand cases which have occurred between 1909 and 1923 inclusive, we have had 170 cases of toxemia, of which fifty-eight were nephritic toxemia, fifty-four cases preeclamptic and fifty-eight cases of eclampsia.

We have always maintained a prenatal clinic for registered cases—printed instructions in prenatal care are given to each patient. From 1909 to 1918 we had forty-nine cases of eclampsia from our own service. In 1918 our prenatal work was markedly increased, and we were obliged to employ a special nurse to follow up our prenatal cases for we have found while the patients were carefully instructed by the physicians they fail to return for examination. Patients suffering with disturbed kidney function, visual disturbances, rising blood pressure, edemas, and other conditions are admitted to the hospital for observation.

The result of the followup system was a decrease in our eclampsia.

Year	*Deliveries*	*Eclampsia*	*Emergency*
1919	1840	0	0
1920	2022	0	0
1921	2046	4	1
1922	1940	5	2
1923	1862	1	.

In the last five years we can conclude that with the régime of the followup system we have had a marked reduction in the number of eclampsias; our average from 1909 to 1918 inclusive is one eclampsia to 275 pregnancies and from 1919 to 1923, one eclampsia to 971 pregnancies.

CONCLUSIONS

In conclusion I wish to state that while etiology is still a mystery the advance made in prophylaxis has greatly reduced the occurrence of eclampsia.

993 Park Avenue.

Hyperemesis and Hematemesis Following Deep X Ray Treatment of the Lower Dorsal Region.—Tuffier (*Bulletin de l'Académie de médecine,* June 17, 1924) reports the case of a woman in whom an operation for breast cancer had been carried out and sciatic pain on the left side due to metastatic tumor growth at the level of the sixth and seventh dorsal vertebræ had appeared some time later. Deep x ray treatments over the spine were given at intervals for a year, each time with marked but temporary benefit. Finally, obstinate vomiting set in, which failed to yield to any form of medication or diet and resulted in loss of weight, small, rapid pulse, and extreme weakness, with gastric achlorhydria. The vomitus consisted of blood, the pulse rose to 140, without fever, and the patient seemed moribund. Adrenalin, one milligram, was injected subcutaneously, and 0.25 milligram more the next morning. The vomiting stopped after the first dose and never reappeared. Gastric tolerance was restored, the pulse dropped to 80, the patient was able to sleep, and convalescence set in. Acid reappeared in the stomach. The case is reported to direct attention to the risk attending intense, prolonged x ray treatment over the lower dorsal region on account of the possibility of injuring the adrenals and interfering with their function. Where such treatment is necessary because of lesions in this region, the adrenals should be protected from the rays with a sheet of lead and adrenalin simultaneously given.

Practical Therapeutics

BISMUTH IN THE TREATMENT OF SYPHILIS*

By Hans J. Schwartz, M. D.
and Oscar L. Levin, M. D.
New York

Since the publication of C. Levaditi (1) and M. M. Sazerac (1) in 1921, describing the effects of bismuth in the treatment of syphilis, and recommending its use in the attack on biological and clinical syphilis, many experiments have been made and results reported by men to whom this subject has made a special appeal. The original work with bismuth for this purpose was begun by Balzer (2), who in 1899 was the first to experiment with bismuth, with a view to testing out its antisyphilitic properties. Balzer, however, abandoned its use after experimenting on dogs, because of the apparent toxic effect which it produced. The experiments were taken up by many others who became interested and in 1912, at the Congress of French Speaking Dermatologists, thirteen reports were presented on the important therapeutic value of bismuth in the treatment of syphilis. In 1920, Sazerac and Levaditi, the two men who did most to promote the use of this drug as an antisyphilitic remedy, confirmed the successful experiments made by Santon and Robert on the treatment of spirillosis in fowls. Following these trials, these two men made repeated experiments on animals and man with bismuth, which they used in the form of an oily suspension of sodium and potassium tartrobismuthate, known as trepol, showing its rapid cicatrizing action on the various syphilitic lesions. Later, in a pamphlet published in *La Presse médicale* for July 26, 1922. Levaditi confirmed the reports of Fournier and Guenot (3), both of whom did considerable research work in this field, on the favorable effect of bismuth on the Wassermann test; and, Levaditi (4) concluded, from his numerous observations and experiments, that bismuth achieves rapid cicatrization of syphilitic lesions at all stages of the disease; that it cures syphilis; that it is at least equal, from a therapeutic point of view, to arsenical preparations; that it is better than mercurial preparations; and, that it is a valuable antisyphilitic remedy for those manifestations of the disease which resist the action of arsenic and mercury.

A survey of the literature in the medical journals reveals many reports on the results obtained from the use of this drug by many men besides Levaditi and Sazerac, Fournier and Guenot. Bernard (5) and Truffi (6), Nicolas, Mussia, Gate (7) and Pasini (8) and several others all report from observation the rapid disappearance of the syphilitic chancre of the primary stage, after only a few doses of bismuth. Troisier (9) reports his interesting experience with the use of neotrepol on ulcerated syphilitic lesions of the larynx, stating that he observed a rapid and total disappearance of these clinical symptoms in a very short time. Ducrey (10) reports a case in which the bismuth not only brought about a rapid healing of the lesions, even where the lesions had become extremely ulcerated, but also affected a disappearance of the enlarged glands.

Other reports by Grecho (11), Muschietti (11), Spillman (12) and Berthet (13), men who have done much to enrich the fund of information on the treatment of syphilis, show that bismuth not only affects the first stages of syphilis, but in the same startling way clears up lesions of the secondary stages. Thus Bloch (14) reports the successful treatment of malignant syphilis with the rapid disappearance of roseola, papular syphiloderms and condylomata. Veber (15) reports a case in which, after the use of bismuth, all such symptoms as specific jaundice and papular scrotal syphilides cleared up with amazing rapidity.

Going on to tertiary syphilis, several reports by Fournier (16), Guenot (16) and Bloch demonstrate the great benefit derived from the use of bismuth in this stage of the dread disease. In such cases where the patient, during his course of treatment, has built up a resistance to arsenic, bismuth has been found, by Hudelo (17), Milian (18), Marie and Fourcade (19), to be of immeasurable value. Even tabetics in some instances have received considerable relief only from bismuth, and Tixier (20), reports a case of heredosyphilis of the nervous system which was distinctly ameliorated by the use of bismuth injections. J. Cajal and H. Spierer (21) also obtained favorable results in the treatment of hereditary syphilis and found that it may be employed without difficulty in children. They used doses slightly larger comparatively than for adults when treating children.

At the same time that these numerous experiments were being made on the clinical effects of bismuth on syphilis, Fournier and Guenot began to ascertain its actual serological effects and later, Levaditi, confirming their favorable results, concluded that bismuth administered "at any stage of the disease," affects not only the specific symptoms and cutaneous lesions, but also the blood reaction. He shows that in cases receiving treatment when the Bordet-Wassermann test is positive, the bismuth exerts a very favorable influence on the degree of reaction. And, although he does not state that one course of bismuth injections will result in a permanently negative Wassermann test, he asserts that bismuth is at least equal to the other antisyphilitic drugs, and in many respects surpasses them. Bloch in his experiments found that the Wassermann test was not affected to the same degree as the clinical symptoms and he, therefore, employed bismuth together with arsenical preparations and found that the Wassermann test became more rapidly negative.

It is our purpose in this paper to publish the results of experiments made with bismuth (neotrepol) in the treatment of syphilis. We first used trepol, the oily suspension of sodium and potassium tartrobismuthate used by Levaditi in his early experiments, but found this to be too painful in its afteraffects

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on the patient. We therefore employed neotrepol, a preparation perfected by Levaditi and Sazerac, consisting of metallic bismuth in suspension in a sterile isotonic solution. This consists of ninety-five per cent. metallic bismuth. It is a powerful drug and at the same time is well tolerated. Buccal symptoms following its use are rare, and pain is practically nil. When we first began to use this preparation, we injected it intramuscularly, every four days, in the same way as is done with insoluble mercury, in doses of one half cubic centimetres, increasing rapidly to two cubic centimetres. Later we changed the routine to once every week.

Other preparations like colloidal bismuth and a sodium derivative of trioxybismuthobenzoic acid have been used intravenously. This method of bismuth injections is contraindicated, however, since it produces a toxic effect.

Although we have spoken of the painless character of the drug, we should mention in passing some of the unpleasant effects of neotrepol. Occasionally we met with the formation of a sterile abscess, which seemed to be due to the fact that when the needles were withdrawn, care was not taken to keep the bismuth deep down in the muscle, letting some of the drug escape into the fatty tissue. The muscle should be pressed down firmly with the fingers when the needle is removed so that the skin and fat will not be drawn up with the needle. There were also occasional encounters with stomatitis, which seemed, however, to depend upon the individual patient, and often upon the presence of decayed teeth. In some patients there developed a black line on the gums, near the free margin, as well as the enlargement of black papillæ on the dorsum of the tongue. These minor, untoward effects, however, may be avoided by proper dental supervision of the mouth, the use of a hydrogen peroxide mouth wash, and finally, by the injection of contramine.

Following is a report of some of the numerous cases of syphilis in which we employed bismuth in the form of neotrepol. These cases were selected at random so that we may present a report which will be generally indicative of the entire experimental work.

PRIMARY OR PRIMARY AND SECONDARY SYPHILIS

Case I.—J. M., No. 5849, male, aged twenty-two, clerk, unmarried, admitted to the Cornell Clinic, January 14, 1922, complaining of a generalized eruption. Showed penile chancre and maculopapular eruption. No previous treatment. Wassermann, January 14, 1922, four plus. First course of eight intravenous salvarsan injections and twelve mercury injections. Wassermann, May 11, 1922, negative. Lesions cleared up. Second course of eight salvarsan injections and twelve mercury injections. Wassermann, November 21, 1922, four plus. Spinal fluid, August 22, 1922, normal. Third course of eight salvarsan and twelve mercury injections. Wassermann, March 23, 1923, negative. Fourth course of eight salvarsan and twelve mercury injections. Wassermann, one plus. First course of twelve neotrepol injections, followed by Wasermann, December 1, 1923, one plus. Second course of twelve neotrepol injections, followed by negative Wassermann.

Comment.—Patient had received thirty-six salvarsan and forty-eight mercury injections and blood Wassermann persisted as one plus. Following twelve injections of neotrepol, Wassermann remained one plus but patient stated he felt very much better and had gained weight. Second course of neotrepol produced a negative Wassermann.

Case II.—F. W., No. 22752, male, aged thirty-three, chauffeur, unmarried, admitted to Cornell Clinic, November 21, 1922, complaining of penile chancre. Examination revealed initial lesion on penis, and characteristic macular eruption of the second stage. Wassermann, November 21, 1922, three plus. First course of neotrepol injections. Wassermann, February 13, 1923, negative. Second course of neotrepol injections. Wassermann, April 19, 1924, negative.

Comment.—Patient showed active lesions of the primary and secondary stages with three plus Wassermann. Following course of neotrepol injections, lesions all disappeared and Wassermann became negative and persisted as negative. This case shows the good effects of bismuth on the clinical and serological manifestations of primary and secondary syphilis.

Case III.—J. C., No. 16192, male, aged twenty-six, clerk, unmarried, admitted to Cornell Clinic June 30, 1922, complaining of generalized eruption. No previous treatment. Examination showed multiple penile chancres and typical, generalized, papular eruption. Wassermann, July 3, 1922, negative. Wassermann, July 10, 1922, negative. Dark field examination for spirochetes, July 20, 1922, negative. Wassermann, July 26, 1922, negative. First course of eight intravenous salvarsan and twelve intramuscular mercury injections. Wassermann, January 5, 1923, four plus. Second course of eight salvarsan and twelve mercury injections. Wassermann, May 24, 1923, negative. Third course of eight salvarsan and twelve mercury injections. Wassermann, August 7, 1923, negative. Patient returned, after two months, showing jaundice and recurrent papular, late secondary eruption. Course of fifteen neotrepol injections. Jaundice cleared up during course and eruption disappeared. Wassermann, at end of course negative.

Comment.—This is an interesting case because of the negative serological findings in an active clinical picture, the strongly positive Wassermann developed after the first course of arsenic and mercury and the recurrence of secondary lesions with jaundice after treatment ceased. The clearing up of the lesions and the disappearance of the jaundice, shows the value of bismuth when used in a case with jaundice.

Case IV.—J. O., No. 18309, male, aged twenty-eight, wireless operator, unmarried, admitted to the Cornell Clinic August 15, 1922, complaining of a generalized eruption. No previous treatment. Examination revealed multiple chancres of the penis and secondary maculopapular eruption. Wassermann, August 24, 1922, four plus. First course of eight salvarsan and twelve mercury injections. Wassermann, December 25, 1922, three plus. Second course of four salvarsan and four mercury injections. Wassermann, May 4, 1923, three plus. First course of twelve neotrepol injections. Wasser-

mann, October 22d, one plus. Second course of twelve neotrepol injections. Wassermann, negative.

Comment.—Patient showed active primary and secondary syphilitic lesions with persistent three plus Wassermann. Clinical evidence was removed after twelve salvarsan and sixteen mercury injections, but Wassermann still remained three plus. Following twelve neotrepol injections, there was decided serological improvement and after second course of neotrepol injections, Wassermanns became negative. This demonstrates the favorable effects of bismuth in Wassermann fast cases of syphilis.

Case V.—W. C., No. 18037, male, aged thirty-four, iron worker, married, admitted to Cornell Clinic August 14, 1922, complaining of sore on penis and sore throat. No previous treatment. Examination revealed active secondary syphilitic eruption and penile chancre. Wassermann, August 14, 1922, negative. Wassermann, August 21, 1922, still negative. Active antisyphilitic treatment started August 16, 1922, but after two mercury injections and one salvarsan injection, patient discontinued treatment because he had to leave the city. Wassermann, September 22, 1922, when patient returned, had become three plus. First course of twelve neotrepol injections. Wassermann, December 15, 1922, negative. Second course of eleven neotrepol injections. Wassermann, January 12, 1923, negative.

Comment.—This case of active primary and secondary syphilis with a negative Wassermann, which became three plus showed a disappearance of clinical and serological evidence after bismuth injections.

Case VI.—J. C., No. 17850, male, aged twenty-one, clerk, unmarried, admitted to the Cornell Clinic August 15, 1922, complaining of a sore on the lip. No previous treatment. Examination revealed typical initial lesion on the lower lip and adjacent adenitis. Wassermann, August 15, 1922, four plus. Course of eight salvarsan and twelve mercury injections. Wassermann, December 1, 1922, four plus. Second course of eight salvarsan and twelve mercury injections. Wassermann, March 20, 1923, plus-minus. Third course of eight salvarsan and twelve mercury injections. Wassermann, July 22, 1923, one plus. Spinal fluid examination, March 27, 1923, showed cell count of 14, positive globulin test and colloidal gold test of 345543320. Wassermann spinal fluid, three plus. First course of twelve neotrepol injections. Wassermann, October 16, 1923, one plus. Second course of twelve neotrepol injections. Wassermann, January 8, 1924, one plus.

Comment.—Patient had a labial chancre and a four plus Wassermann which was reduced to a one plus after twenty-four salvarsan and thirty-six mercury injections. After twenty-four injections of neotrepol, the one plus Wassermann still persisted. Patient showed evidence of early involvement of the nervous system, and resisted salvarsan, mercury and bismuth injections.

SECONDARY SYPHILIS

Case VII.—P. M., No. 17509, male, aged fifty-five, porter, married, admitted to the Cornell Clinic August 2, 1922, complaining of sores on the tongue and lips. No previous treatment. Examination revealed mucous patches of the tongue and lips. Wassermann, August 2, 1922, three plus. Course of sixteen salvarsan and nineteen mercury injections. Wassermann, February 27, 1923, three plus. Course of fifteen neotrepol injections. Wassermann, June 26, 1923, three plus. Second course of twelve neotrepol injections. Wassermann, February 8, 1924, three plus.

Comment.—This patient presented a Wassermann fast reaction. He was placed on neotrepol because of the marked stomatitis which he developed after the mercury injections. Stomatitis also developed from neotrepol, and as a result it was impossible to continue treatment.

Case VIII.—A. R., No. 34726, female, aged twenty-six, waitress, married, admitted to the Cornell Clinic July 19, 1923, complaining of a generalized eruption. No previous treatment. Examination revealed a typical papular secondary eruption. Wassermann, July 19, 1923, three plus. Blood Wassermann not affected by course of eight salvarsan and twelve mercury injections. Course of twelve neotrepol injections. Wassermann, January 8, 1924, two plus. Second course of twelve neotrepol injections. Wassermann, one plus.

Comment.—This patient was given bismuth in preference to intravenous injections of salvarsan because of the absence of visible or palpable veins, which made intravenous injections difficult to perform. This demonstrates the advantage of having a drug which can be used intramuscularly, when intravenous injections are difficult. The bismuth reduced the three plus Wassermann to one plus.

Case IX.—H. P., No. 26387, male, aged twenty-six, baggage checker, unmarried, admitted to Cornell Clinic February 20, 1923. Had received eight salvarsan and twenty-two mercury injections prior to admission. Wassermann, February 20, 1923, two plus. Course of six salvarsan and twelve mercury injections. Wassermann, June 5, 1923, one plus. Second course of six salvarsan and twelve mercury injections. Wassermann, October 9, 1923, one plus. Course of twelve neotrepol injections. Wassermann, December 28, 1923, one plus.

Comment.—In this case, the Wassermann was slightly modified by arsenic and mercury, but not affected by bismuth.

Case X.—G. M., No. 4106, female, aged twenty-nine, colored, housewife, married, admitted to Cornell Clinic December 16, 1921, complaining of a generalized, itching eruption. No previous treatment. Examination revealed a generalized, papular eruption and other evidence of secondary syphilis. Wassermann, December 31, 1921, one plus. Spinal fluid examination revealed nothing abnormal. First course of four salvarsan injections and twelve mercury injections. Wassermann, May 9, 1922, two plus. Second course of eight salvarsan and twelve mercury injections. Wassermann, October 19, 1922, still two plus. Third course of eight arsenic, two mercury salicylate and twelve bichloridol injections. Wassermann, May 8, 1923, two plus. First course of neotrepol injections, on September 18, 1923. Wassermann, negative.

Comment.—This case is a good demonstration of the beneficial effects of bismuth in a seemingly Wassermann fast case.

LATENT TERTIARY SYPHILIS

Case XVI.—D. J., No. 22697, male, aged forty, colored, porter, married, admitted to the Cornell clinic December 2, 1921. Had received fifteen arsenic and fifteen mercury injections previous to admission. Wassermann, December 2, 1921, three plus. Course of ten arsenic and fifteen mercury injections. Wassermann, April 13, 1922, three plus. Second course of six salvarsan and eleven mercury injections. Wassermann, July 20, 1922, two plus. Third course of eight salvarsan and twelve mercury injections. Wassermann, January 5, 1923, two plus. Fourth course of six salvarsan and seven mercury salicylate and ten mercuric cyanide injections. Wassermann, May 17, 1923, three plus. Course of twelve neotrepol injections. Wassermann, two plus. Second course of twelve neotrepol injections. Wassermann, one plus. Patient is still receiving treatment.

Comment.—In this case the Wassermann test showed a poor response to mercury and arsenic but immediately reacted to neotrepol injection.

Case XVII.—E. R., No. 3980, male, aged thirty-five, married, admitted to the Cornell Clinic, with history of having had syphilis. Had received various forms of treatment. Wassermann, December 15, 1921, two plus. Spinal fluid, December 23, 1921, showed increased pressure, pleocytosis 50, reduction of Fehling's solution, four plus Wassermann. Twenty-five intravenous injections of salvarsan, thirty-three muscular injections of mercury salicylate and three bichloridol injections. Wassermann, May 11, 1923, two plus. Spinal fluid, May 12, 1923, showed marked globulin reaction, pleocytosis 24, Wassermann test, three plus, colloidal gold, 2233220000. First course of neotrepol injections. Wassermann, reduced to one plus. Second course of twelve neotrepol injections. Wassermann one plus.

Comment.—Patient showed persistent evidence of syphilis in the blood and spinal fluid after arsenic and mercury treatments, but responded slightly to neotrepol injections. Patient is still under treatment.

Case XVIII.—F. D., No. 8650, male, aged thirty-three, lettercarrier, unmarried, admitted to the Cornell Clinic March 3, 1922, with a history of having had syphilis. No previous treatment. Wassermann, March 4, 1922, three plus. Course of twenty-four salvarsan and thirty-six mercury injections. Wassermann, March 20, 1923, still three plus. Course of twelve neotrepol injections. Wassermann reduced to two plus. Discontinued further neotrepol injections because of painful stomatitis.

Comment.—Patient showed immediate serological improvement after bismuth injections, but had to discontinue treatment because of development of stomatitis. This is one of the few cases which showed a stomatitis after the use of bismuth.

Case XIX.—K. M., No. 4427, female, aged twenty, clerk, unmarried, admitted to the Cornell Clinic June 25, 1922, with a history of having had syphilis. No previous treatment. Wassermann, June 6, 1922, four plus. Course of sixteen salvarsan and twenty-four mercury injections. Wassermann, February 26, 1923, still four plus. Course of twenty-four neotrepol injections. Wassermann, August 7, 1923, reduced to three plus.

Comment.—Case of resistent Wassermann test yielding slightly to bismuth.

Case XXII.—J. W. C., No. 43157, male, aged forty, telegraph operator, married, admitted to the Cornell Clinic April 18, 1922, with past history of having had syphilis and having received eighteen intravenous arsenic injections, eighteen intramuscular mercury injections and fifteen subcutaneous injections of arsenic. Wassermann, April 18, 1922, three plus. Course of twenty-eight salvarsan and twenty-eight mercury injections. Blood Wassermann, July 31, 1923, one plus. Course of neotrepol injections. Wassermann, October 26, 1923, three plus.

Comment.—Patient showed slight serological improvement under arsenic and mercury, but none under neotrepol, and was therefore placed back on salvarsan and mercury treatment.

Case XXIII.—U. S., No. 38205, male, aged thirty-eight, metal worker, married, admitted to the Cornell Clinic September 11, 1923, with a history of having had syphilis. Had previously received five years of treatment at Cornell Clinic. Wassermann, September 11, 1923, negative. Course of twenty-two neotrepol injections. Wassermann, negative. Patient relieved of nervous symptoms.

Comment.—This patient came to the clinic with a negative Wassermann, but complained of subjective symptoms which were relieved by the bismuth injections. Spinal fluid examination refused.

Case XXIV.—A. S., No. 7436, male, aged thirty-two, civil engineer, married, admitted to Cornell Clinic upon reference of Life Extension Institute, February 7, 1922. Penile chancre in 1911. Had previously received nine arsenic and four mercury injections, and had been taking mercury pills for four months. Wassermann, February 7, 1922, three plus. Course of eight salvarsan and twelve mercury injections. Wassermann, June 14, 1922, three plus. Second course of eight salvarsan and eleven mercury injections. Wassermann, October 17, 1922, three plus. Third course of eight salvarsan and twelve mercury injections. Wassermann, February 27, 1923, one plus. Fourth course of eight salvarsan and twelve mercury injections. Wassermann, July 14, 1923, one plus. Course of twelve neotrepol injections. Wassermann, October 9, 1923, negative. Second course of twelve neotrepol injections. Wassermann, January 15, 1924, negative.

Comment.—This case shows the value of bismuth as an adjunct to arsenic and mercury.

Case XXVIII.—E. A., No. 2204, male, aged thirty-five, sailor, unmarried, admitted to Cornell Clinic November 25, 1921, with asymptomatic syphilis. Had received twelve arsenic injections previous to admission. Course of four silver salvarsan injections, twenty salvarsan injections. Wassermann, May 5, 1922, one plus. Course of thirty-five mercury injections. Wassermann, January 11, 1923, one plus. Fifteen neotrepol injections. Wassermann, March 23d, negative. Second course of injections. Wassermann, June 12th, negative.

Comment.—This case showed no improvement under silver salvarsan, salvarsan and mercury, but immediately responded to bismuth. However, the spinal fluid which had shown a four plus Wassermann, pleocytosis 75, colloidal gold 0134432100 on August 21, 1922, had not been affected, and on April 4, 1923, was unchanged.

(*To be concluded.*)

Bellevue Hospital in 1874.

Surgery in Bellevue Hospital Fifty Years Ago*

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No attempt has been made to compare the surgery of today with that of fifty years ago. Surgery now is so standardized and practised by all surgeons, the contrast being so great, no comparison is needed. In 1874 Bellevue Hospital was just recovering from a public clamor for the removal of the hospital as totally unfit to house the sick, shown by the great number of deaths from pyemia, erysipelas and puerperal fever, twenty-eight deaths in fifty-three confinements. It was even suggested to tear down the old hospital and erect one on the pavilion plan in its place.

A committee from the medical board was appointed to consider the prevalence of erysipelas and pyemia in the hospital and suggest measures to prevent, if possible, the recurrence of these diseases in the future. The committee reported as follows: Prevent overcrowding by reducing the number of patients; improve ventilation; make the nursing more efficient and increase the number of nurses. In cases of pyemia, in addition to the above, the following suggestions were made in view of the prevalent error in referring the etiology of the disease invariably to hospital miasm. The general adoption of the antiseptic treatment of wounds and immediate removal of the patients from the wards. As a result of the recommendations made by the committee the following changes were made. All cases of pyemia and erysipelas were removed to the pavilion; the number of beds reduced from nine hundred to six hundred; the maternity service was transferred to the Charity Hospital on Blackwell's Island; a training school for nurses was established; the wards were cleaned and fumigated with chlorine gas and special towers were erected to contain the bathrooms and toilets, these having no direct communication with the wards.

The hospital was organized into four medical and four surgical divisions. There were twenty-four visiting physicians and surgeons, there being no associate or assistant visiting. The house staff was small, four house physicians and four house surgeons, each with a senior and junior assistant. Two ambulance surgeons looked after the ambulance service.

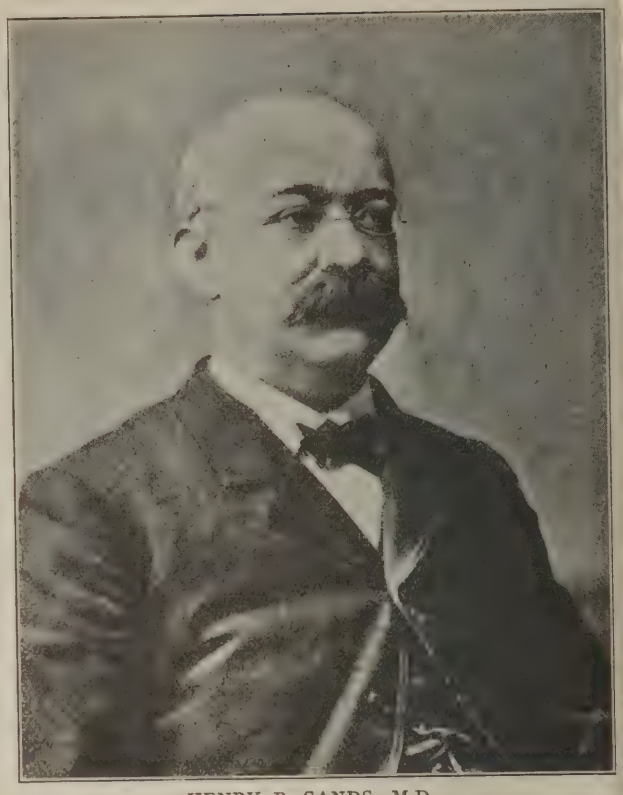
The visiting surgeons having no assistants were subject to call any time during the day and night. If they were unable to respond to the call, and, if no other visiting surgeon was available, the house surgeon was directed to call a consultation of all the house surgeons and be guided by the results of the consultation. On the third surgical division the standing orders were that all surgical cases of interest were to be held for the Saturday afternoon clinic provided the life and well being of the patient was not endangered by so doing.

The senior and junior assistants did not reside in the hospital and went off duty at 6 p. m. If any surgical case needing immediate operation came in during the night the house surgeon in charge of the case was obliged to call on the other house surgeons to act as assistants. In those days the service for both visiting and house staff was strenuous, exacting and exhausting but the experience was most varied and profitable.

There were no laboratories for the examination of the fluids of the body, blood chemistry was unknown, urinary examination was made by the junior assistant. There were no x ray laboratories, but there was a dead house where Dr. Janeway made a complete study of diseased and injured tissues. There was no follow up system. None of the bac-

*Read before the Surgical Section, New York Academy of Medicine, March 7, 1924. Read before the Society of the Alumni of Bellevue Hospital, May 7, 1924.

JAMES R. WOOD, M.D.



HENRY B. SANDS, M.D.

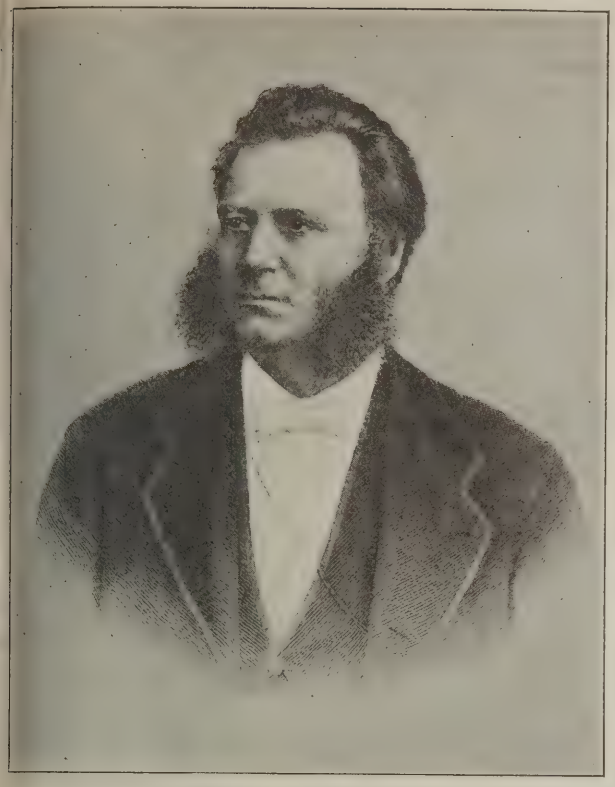
terial causes of the most important diseases had been discovered. In spite of the lack of laboratory facilities, study of the patients, their diseases and injuries at the bedside, was highly developed. In fact, I might say, it was an era of clinical study—in which clinical giants were made.

BACTERIOLOGY

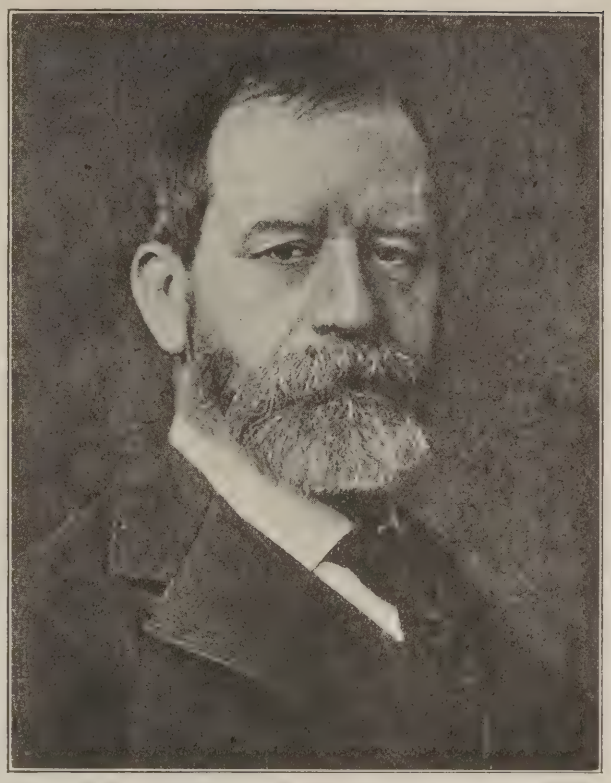
Bacteriology as a science was just being talked of. Acting on the discoveries of Pasteur, Lister in 1871 published his antiseptic method of wound treatment. He endeavored by antiseptic dressings to deprive the atmospheric germs of their septic energy, so that whatever air reached the wound might contain no particles capable of exciting local septic changes. These dressings were practically impervious to air. While the part was being dressed or operated on, a spray of a solution of carbolic acid one to forty was kept constantly playing over it to render inert the germs in the air. Dr. J. C. Warren, of Boston, states that the antiseptic treatment of Lister has virtually been abandoned in this country. No further attempt is now made to prevent decomposition taking place in the fluids collecting on wounded surfaces.

Although the committee in its report strongly recommended the use of antiseptic wound treatment, it was not until 1877 that this method again began to be utilized and then became very popular. Such was the organization and equipment of the hospital, and such was the trend of thought on the antiseptic treatment of wounds among the surgeons of the period when I went on duty as junior assistant on the third surgical division, April 1, 1875. The principal surgical clinic was given by Dr. James R. Wood, professor of clinical surgery in the Bellevue Hospital Medical College. It was held on Saturday afternoons during the session of the colleges and was open to the students of all the colleges. It was generally packed to the doors. The number of graduates from the three colleges in the spring of 1875, was three hundred and ninety-eight. As Dr. Wood had such a great following, there was an abundance of operative material.

Wood would enter the amphitheatre wearing a black silk gown buttoned tightly about the neck and wrists. Over the left breast was a boutonniere of bright flowers. Accompanying him was his house surgeon wearing any old coat, in the button hole of the left lapel were many well waxed silk ligatures, no special care having been taken where the silk and wax had been kept. On a side table a most elaborate display of highly polished instruments with beautiful deeply ridged ivory handles was made. If during an operation an instrument did not please Dr. Wood, he would dash it on the floor and scold the maker who was always present. The anesthetic, ether, was given by the junior assistant from a cone made with a towel and folded newspaper, with a wad of absorbent cotton within. No special preparation of the surgeon, assistants, patient, instruments or dressings was made for the operation. Esmarch's bandage of elastic webbing was used to control hemorrhage. The greatest care was taken to prevent loss of blood following operation. If there had been amputations, the beds of these patients were arranged in a semicircle and a watcher was so placed that he could keep in view the exposed stumps at all times. Under the stump was an elastic bandage ready to tighten at a moment's notice. One of the most interesting parts of the service was the treatment of amputations by the open method. It is so interesting, and, as the results were as good as the same operation performed



LEWIS A. SAYRE, M.D.



EDWARD G. JANEWAY, M.D.

under the most aseptic method of today, it is worthy of a more deailed description.

For over a year all the amputations on the third surgical division were treated by this method, and the results were so surprisingly successful for hospital practice, that Dr. Dennis, in a paper entitled Treatment of Amputations by the Open Method, published in the NEW YORK MEDICAL JOURNAL, January, 1876, called the attention of the surgical profession to this method as the best and safest for amputations in larger hospitals. This method was inaugurated in Bellevue Hospital by Dr. James R. Wood, and to him is due all the credit of introducing and carrying into effect this great reform in surgery. Amputations in large hospitals had for the last few years been attended with a frightful mortality. In fourteen consecutive major amputations performed during Dr. Wood's service within the past year there has not been a death, although the patients occupied the same wards that were vacated a year ago on account of puerperal fever. The method of operating on the fourteen cases was by the lateral skin flaps, circular division of muscles and removal of the sharp point of the crest of the tibia with saw or rongeur forceps. It is important to dissect the flaps long when used in the open method as shrinkage often follows exposure to the air. Esmarch's elastic bandage was employed in every case and in no instance has sloughing or any other complication occurred. A pillow of oakum with a small piece of sheet lint over it is placed under the stump which is allowed to rest on this support until the wound is nearly healed. A small piece of gauze is loosely laid over the stump and a cradle protects it from contact with the bed clothes. The wound is gently douched with carbolic acid solution one to forty at frequent intervals, after which balsam of Peru is poured over the granulating surface. The sheet lint over the oakum being covered with laudable pus is changed frequently. In about a week when the wound is granulating freely and the ligatures are coming away the flaps are gradually drawn together with adhesive plaster. During the entire time of healing of the wound great care is taken to avoid infection. No sponges are used, each patient has his own bottle of balsam of Peru, and, as far as possible, a separate set of dressing instruments; if these were used on another patient they were first thoroughly washed in carbolic acid solution. Each dresser invariably washed his hands in carbolic acid solution after dressing one case before undertaking another, and any one dressing cases in the pavilion or assisting at autopsies was not allowed near healthy wounds. In leaving the stump open and allowing effete material free drainage, the most important factor which produces secondary fever is eradicated and the patient escapes the severe constitutional disturbance dependent upon the absorption of decomposing pus from a closed wound. In all the cases reported, including amputation of the arm and even the thigh, no patient has shown a temperature higher than 103° and many of the cases have been below 99° during the entire period of convalescence, with the exception of one or two nights. In comparison with the major amputations treated with a closed stump, the temperature ranged from 104°-105° and often rose to 106°.

TREATMENT OF TUMORS OF THE BREAST

In most of the cases the tumor had been present more than a year, and there was retraction or ulceration of the nipple. The clinical diagnosis was scirrhous cancer. All were operated on by the oval

method, the upper part of the incision looking towards the axilla. The tumor mass only was removed unless there were enlarged glands in the axilla; these were dissected out with the handle of the scalpel and finger. Only a small quantity of blood was lost in all of the cases. Whenever a vessel was divided, hemorrhage was controlled by finger pressure until forceps were applied. At the clinic, after removal of the tumor, a towel was packed into the wound and the patient removed to the ward, where the towel was removed and the open wound exposed to the air to allow it to glaze over and check oozing. After the clinic the house surgeon would scrape away the clots in the wound, tying or twisting any bleeding points and bring the edges together with silver wire sutures an inch apart, reinforced with strips of adhesive plaster between the sutures. The ligatures were brought out at the upper angle of the wound, this being the most dependent part when the patient was lying down. Compresses of folded towels held in place by a broad bandage passing around the chest were placed on each side of the line of suture. The forearm was placed in a sling. The dressings and adhesive strips were changed every day. If the edges of the wound looked red, compresses of lead and opium wash were applied. The highest temperature, 102°, usually appeared on the second, third or fifth day. Thirty drops of McMunn's elixir of opium was always given the first night, repeated if necessary, to give the patient a good rest. Ligatures began to loosen about the sixth day, if they were slow in coming away gentle traction was made, which gave rise to great pain if a nerve was included in its grasp.

House Staff of the Third Surgical Division.
H. M. Silver, surgical assistant; F. S. Dennis, house surgeon; A. Pell, junior assistant surgeon.

It was not until twenty years later when Halstead in November, 1894, and Willy Meyer in December, 1894, published their articles on the radical operation for cancer of the breast, that a ray of hope came to those suffering from this dread disease.

FRACTURES

Large numbers of fractures were treated fifty years ago in Bellevue Hospital. Earlier in the paper, it was stated there were at that time no x ray laboratories in the hospital, the substitute for their service resided in the gray cells presiding over the special senses which, in the surgical visiting staff, were developed in the highest degree. Their finger tips when examining a fracture seemed to have eyes capable of seeing everything pertaining to the fractured bone. Great attention was paid to the careful measurement of a fracture before the treatment was begun and after the splints were removed.

Femur.—All fractures of the femur on Dr. Wood's division were treated with Buck's extension until all signs of inflammatory swelling had disappeared, rotation of the thigh being prevented by a long side splint extending from just below the axilla to beyond the foot, where it was attached to a cross piece. After two to eight days a plaster of Paris splint was applied, great care being taken to pad the perineum and bony points. To strengthen the splint, pieces of strap iron were placed in the spica at the groin. Forcible extension with compound pulley under ether was not necessary. On Dr. Sand's division the plaster dressings were applied early to prevent inflammatory swelling by the moderate and uniform compression to the broken limb afforded by the dressing, but one must be on the lookout for any signs of impaired circulation; if they appear the whole length of the splint should be slit up. When the plaster dressing is applied early it may be necessary in many cases to make extension with the compound pulley under ether, keeping up the extension until the plaster hardens. For cleanliness, the upper part of the splint when dry was painted with melted paraffin. The splint was generally removed in six weeks, the average shortening in fifty cases being three eighths of an inch. Dr. Sands placed a plaster splint on a case of fracture of the femur just below the trochanter major with the leg and thigh flexed (double inclined plane) with a very satisfactory result. Volkmann's counter extension bar was used for counter extension during application of splint.

Leg.—The larger number of fractures of the leg were of the compound comminuted variety, caused by a wheel of a horse car passing over the leg. These cases were carefully explored with the finger and usually condemned to amputation. In less serious injuries, if the wound was small it was sealed with a cotton and collodion dressing and the leg placed in a fracture box well padded with oakum. The simple fractures were also placed in a fracture box. When all signs of inflammatory swelling had disappeared, they were put in plaster of Paris casts extending from the toes to the knee. The cast was fenestrated opposite the wound, if compound, and tube drainage was provided if necessary. Dr. Sands held the same views for the early

application of plaster dressings in fractures of the leg as he did in fractures of the femur.

Colles's fracture.—Dr. Wood insisted that all Colles's fractures should be treated with well padded lateral splints extending from the wrist to the elbow,

D. L. Wallace, C. P. Smith, H. M. Silver, and C. H. Thomas.
House Surgeons at Bellevue Hospital in 1874.

in order to avoid stiffness of the wrist and fingers. We followed Hamilton's direction in reducing the deformities by making forcible pressure on the back of the lower fragment, the force being applied near the styloid side of the fragment. The splints were allowed to remain in use for five weeks, being removed from time to time for massage treatment. Hamilton's work on fractures and dislocation was our guide in treating most of the fractures.

ABDOMINAL SURGERY

Surgery of the abdomen was a closed book. Dr. Wood was bitterly opposed to operation for pistol shot wounds of the abdomen, preferring to use the Clark or opium treatment. It was not until the evening of November 2, 1894, when Dr. William T. Bull opened the abdomen for a pistol shot wound and successfully closed eleven perforations of the intestines, that surgery of the abdomen for pistol shot wounds became an open book. Dr. Dennis on December 20, 1895, opened the book for stab wounds.

STAB WOUNDS

In stab wounds, three or four feet of intestines generally protruded. Covered not infrequently with bar room sawdust. These were washed if necessary, and replaced, the wound being carefully closed. The patient was placed under the influence of opium at once and the quantity of food reduced to a minimum. If shock was present at the time of admittance, hypodermic injections of whiskey were given, the hot air bath used, and, if the shock was severe, the extremities were rubbed with tincture of capsicum. If tympanites developed, turpentine stupes were applied. If the intestines had escaped injury, this treatment was successful. I do not remember a single case of typhlitis or perityphlitis on the third surgical division during my service. In those cases occurring on other divisions the patients were treated with poultices, exploring needles and Parker's operation, if pus was found. Dr. Sands was very much opposed to the operative treatment of perityphlitis and was needlessly cautious in recommending laparotomy even as an exploratory procedure in early cases. Several years later he became an enthusiastic operator. It was not until the classic article on appendicitis by Reginald Heber Fitz of Boston, Mass., appeared in 1886 that the fear of operations on typhlitis and perityphlitis, together with these terms, were thrown into the surgical scrap heap.

HERNIA

Radical cure of indirect inguinal hernia. Whenever a patient with a hernia unreduced entered our wards he was placed in a position now called Trendelenburg's position and taxis made with or without ether. If the hernia was one suitable for radical cure, operation was recommended. The method used had this object in view, viz.: to cause an adhesive inflammation between the invaginated scrotum and sac and the tissues of the inguinal canal and internal abdominal ring. This was attempted by the use of Wützer's instrument. The hernia is first reduced and held in place by an assistant, the operator then invaginates the scrotum into the inguinal canal with the hollow cylinder of wood, a part of

R. F. Hine, H. Goldthwaite, J. C. Cochrane, and J. C. Kendall.
House Physicians at Bellevue Hospital fifty years ago

the instrument. A flexible gilt steel needle fixed on a movable handle and connected with the wooden cylinder is thrust forward through the invaginated scrotum, the peritoneal sac, and through the anterior wall of the abdomen and enters an opening in

the narrow wooden pad which rests on the skin over the inguinal canal. The instrument is held in place with lateral pads and a spica bandage, and is allowed to remain in place six or eight days when it is removed. The cul de sac made by invaginating the scrotum is stuffed with lint and the parts supported with a spica bandage. The patient is kept in bed four weeks with a broad bridge of plaster across the thighs just below the scrotum; now, when out of bed, a truss is substituted for the bandage. Hamilton states this method was well received and used by many surgeons, but he doubts the efficacy of the procedure.

In the first case so treated, the instrument was removed at the end of a week. Signs of superficial sloughing of the skin were found as a result of pressure of upper part of splint. There was little pain; the highest temperature was 99° and there were no signs of peritonitis. A week after the instrument was removed the patient got out of bed without permission and the hernia came down again.

GENITOURINARY SURGERY

The genitourinary cases were most interesting. Varicoceles were treated by amputating the redundant scrotum. Epididymitis was treated by rest in bed, tobacco-poultice, later by strapping. Cases of stricture were numerous, and many of the sufferers were sailors who had not been able to have treatment while at sea. The cases became more interesting the tighter the stricture. Remembering Syms's dictum that whenever urine passed out through a stricture an instrument could be passed in, our ambition was to pass a whalebone guide through the stricture; sometimes hours would be spent in accomplishing this. The following was our technic. Warm sweet oil was forced into the urethra and kept there with finger pressure. The whalebone guides, some with points bent or twisted so that their extremities would be outside the axis of the shaft of the instrument, were passed as far as they would go, their points engaging in lacunæ or false passages. This was continued until one entered the bladder or the urethra was full. Then each guide would be gently raised up and down and rotated until one entered the bladder. On this, a small tunneled catheter or sound was passed. If it was found impossible to dilate the stricture with the tunneled instruments, an external urethrotomy was done, followed by the passage of large sounds at frequent intervals.

Three night nurses of the first class in the first training school for nurses in America.

Extravasation of urine was treated with long and deep incisions in the scrotum. Retention of urine from enlarged prostate, if not complete, was treated by the use of the rubber catheter, French olivary gum catheter, or silver catheters with an exaggerated prostatic curve; if these instruments failed, one of the best methods to be tried next was one in which a metal stylet curved to suit the case is inserted into a gum elastic catheter, the instrument is introduced down to the prostate, the stylet slowly withdrawn an inch, at the same time the catheter is gently pushed onward. The increased curve thus obtained allows the point of the instrument to surmount the obstacle and enter the bladder. Great care was taken not to empty the bladder too quickly. In the presence of complete retention, the urine is withdrawn with a Dieulafoy aspirator, the capillary trochar being introduced just above the pubes.

ORTHOPEDIC SURGERY

We also had a large and interesting orthopedic service with Dr. Lewis A. Sayre. After a very careful study of the histories of the cases mentioned and many others found in the records, I noticed that in spite of unfavorable surroundings and lack of any special preparation for operation, the histories ended with the statement —"This day the patient was discharged cured." Was this due to the greater resistance on the part of the patient, to greater care in the after treatment by the house staff, or were the germs less virulent on account of the simpler mode of living at that time?

PERSONNEL

Before closing this paper I want to call your attention to some numbers of the visiting staff I came in contact with who made a lasting impression on me. They moulded the surgical thought and practice of the day. You will notice they all possessed those outstanding characteristics which make great men in any walk of life.

James Rushmore Wood was a man of wonderful personality; a great anatomist; a rapid and skilful operator, whose results were brilliantly successful. He had great power of clinical observation and diagnostic acumen. His energy was unfailing and he was always on the alert to detect and combat any unfavorable sign. The tripod on which he rested his treatment was rest, cleanliness and free drainage. Although stern and unyielding on the professional side, he always carried with him the warm and helpful side for all those worthy of it. His house staff, private students and patients adored

him. He was an inspiration never to be forgotten.

Henry Berton Sands had the power and charm of a great personality. He had a singular acuteness of intellectual vision and was rarely deceived by sentimental considerations, personal predilections or by accepted tradition. He was a master of anatomy. He was a rapid and skilful operator, selfpossessed in the presence of every emergency and fertile in resources. His unerring judgment and a certain diagnostic instinct gave him a fame which outleaped the barriers of his home city. His marvelous industry and unimpeachable punctuality, conjoined with loyalty to his profession, and an ever present modesty, made him a favorite consultant with his professional brethren far and near. He had the largest number of private students of any surgeon in New York. His cheerful and confident entrance into the operating room appeared to prove to house staff and students that all that brain of man could devise or the hand of man execute would be put forth for the welfare of the patients.

Lewis Albert Sayre also had a wonderful personality; he was of powerful build and had a keen searching eye. His unflagging enthusiasm for his work, his interest in the house staff and patients inspired confidence and aroused a like enthusiasm in those who came in contact with him. His enthusiasm knew no bounds when he was speaking of his success in treating spinal diseases with the plaster jacket, or late stages of hip disease by excision of the hip joint. He was a wonderful teacher of orthopedic surgery, in fact, orthopedic surgery as a specialty began with his teaching. He took as much interest in eaching his house staff in the wards as he did the students in the amphitheater. Those who knew him only superficially were apt to consider him rough; he was blunt of speech and made no pretence to diplomacy, but those who saw him at close range knew there was a warm and tender side to his heart. He was a great favorite with children. He had an enormous amount of material from which to derive his experience, as thousands of the city's poor passed through his hands. To him belongs the credit of introducing the use of oakum into surgical practice. Just after his graduation in medicine while he was dressing a wound in a tenement house, the dressings gave out. While thinking what to do, he noticed some tow sticking out of an old lounge; this with balsam of Peru completed the dressing. This makeshift started the use of oakum in surgery.

Edward Gamaliel Janeway had a great personality of quiet reserve. He was one of the committee which studied and reported on the causes giving rise to the prevalence of puerperal fever, pyemia and erysipelas in the wards of the hospital. During this period he was showing a phenomenal assiduity as a pathologist. He was doing the hardest kind of work, combining clinical study in the wards with study of appearances presented post mortem. He always went to the root of the matter. He was a keen observer and an excellent interpreter. He showed almost superhuman detective power in ferreting out the hidden causes of disease, combined with wonderful zeal and enthusiasm for his work. His accurate diagnoses were due to his rare qualities of mind and to his tenacious memory, a memory which stored up every experience, so that when he made a diagnosis that seemed difficult—he would say—he knew he was right because he had seen a case just like this before. He spent himself unselfishly for others, he was as kindly and gracious to the poor as he was to the rich. He was always ready to aid the surgical house staff and, if they could not open the abdominal cavity while the patient was alive, he would demonstrate the points of interest in the dead house. As the years passed, Dr. Janeway's skill in diagnosis increased until just before his death he was recognized as the greatest diagnostician in the world.

In conclusion, I want to return thanks to Professor Frederick Shepard Dennis, my house surgeon fifty years ago, for the use of his copy of histories taken during his service, also for the use of reprints of papers on the treatment of amputations, but most of all for advice given during the preparation of this paper.

111 East Thirty-ninth Street.

A Pope as Physician.—Probably very few persons, even members of the medical profession, know that one of the Popes had exchanged the physician's hood for the papal tiara. Dr. David Reisman (*Annals of Medical History,* December, 1923) writes of his researches into this historical matter. For church and political reasons, a conclave of cardinals in the year 1276 elected to the Papacy a Portuguese physician, Petrus Hispanus, already cardinal bishop of Tusculum, as Pope John XXI. According to nearly all writers of ecclesiastical history, he should have been John XX, since there were apparently only nineteen Johns before him. James Branch Cabell, in his characteristic way of culling tidbits for his fantasies from historical odds and ends, fashions the "cantrap" given by the "Master Philologist" to Jurgen for use as a charm, out of this discrepancy: "At the death of Hadrian V, Pedro Juliani, who should be named John XX, was, through an error in reckoning, elevated to the papal chair as John XXI."

In the Middle Ages, the name of Petrus Hispanus was a medical household word. He was the son of Julianus, also a physician, and first appears as a student in the University of Paris, where he was probably made *magister.* About 1247 we hear of him as teaching medicine at Siena, where he wrote his first medical work, *A Dietetic Treatment of Surgical Patients,* and probably did some practising. As a native of Portugal, where the Moors were still in power, he doubtless understood Arabic, which accounts for his works on Avicenna and Isaac Judaeus. His greatest medical work was the *Thesaurus pauperum,* printed for the first time in 1476 in Antwerp. "The Thesaurus," writes Reisman, "is a collection of recipes for every disease under the sun. It had an enormous vogue in the Middle Ages. Being copied and recopied before the discovery of printing, every copyist added his own favorite prescriptions until the work finally became a hodgepodge of medical treatment and magical formulas of the most grotesque sort."

Petrus Hispanus tried his best to exclude from his works superstitious and sympathetic remedies, but his successor, Arnald of Villanova, included in his book remedies against demons and evil spirits.

Editorial Articles

PHYSICAL LABOR AND AGE

That hard physical labor after the age of forty definitely tends to shorten the life span, has been shown by Dr. Raymond Pearl of Johns Hopkins University in a recent series of investigations. Pearl states that this unfortunate relationship between hard work and duration probably holds in graded degrees after middle age for nearly every walk of life, whether the labor is performed chiefly out of doors or indoors, and "the weight of the evidence supports the view that hard work itself is the primary cause rather than any general environmental factor arising from social class distinctions." The collection of the proper raw statistical material on which to base such a study appeared, says Pearl, "to be a hopeless task until we obtained certain extremely valuable statistics on the mortality of occupied males published from the offices of the Registrar of England and Wales. These data fulfilled most of the requirements and may be fairly regarded as the most comprehensive and accurate statistics of occupational mortality now in existence."

The statistics covered 132 occupations and a period of three years. So that mortality trends according to age might be studied, the death rates were grouped in five year periods. Five rather loose classifications according to the approximate amount of physical energy expended were adopted, and in addition indoor and outdoor groupings.

The first results of the analysis, which dealt with young men working indoors, showed no harm from hard work—"in short, it appears very difficult to kill a man by physical hard work before he is forty, occupational and industrial hazards being excluded. But after forty is passed our results tell an entirely different story." From thirty-five to forty-four, the death rate in heavy occupations showed itself to be 3.9 per cent. higher than that for the light occupations. In the period from forty-five to fifty-four it rises to 12.8 per cent. greater; from fifty-five through sixty-four to 18.6 per cent. greater. Workers in iron and steel industries, blacksmiths, stokers, and all others included in the heaviest class of indoor work become progressively more and more unlikely to attain a ripe old age after forty. Among the lighter occupations were included those of insurance agents, messengers, gamekeepers, and drivers of coaches, cabs, omnibuses and automobiles; among the heavier occupations, dock and wharf laborers, coal heavers, quarrymen and coal, tin, iron and lead miners. The death rate of the latter class from the age of thirty-five through forty-four is 3.2 per cent. higher; from forty-five through fifty-four is in 12.6 per cent. higher; and from fifty-five to sixty-four inclusive, 24.8 per cent. higher. "Although the death rate of the outdoor workers in general is lower than that of all indoor workers, the same relation between heavy and light occupations and the duration of life is evident. . . . There only remains the question of whether environmental conditions arising from social class distinctions may have been the primary factor instead of hard physical labor. Rearrangement of the data indicates clearly that such is not the case, though it is quite true that social class is often correlated with the degree of physical exertion which a man may put forth in his daily work."

Pearl's researches seemed to indicate that the same relation between physical exertion and the duration of life holds good for women as well as men. Arnould, he tells us, recently pointed out in France that the fall in the tuberculosis death rate in recent years has been relatively greater for men than for women, and he attributes this to an increasing tendency to tuberculosis among women caused by hard work.

FIFTY YEARS OF MEDICINE

The reflections on progress in medicine by an acknowledged leader of the profession, and one who has been in the van for many years, should be always interesting and attract attention. Sir David Ferrier, the well known nerve specialist who has had, probably, the unique experience of giving the introductory address at the opening of the session of a London hospital medical school fifty years ago, and of giving the address at the opening session of the same hospital on October 1st of this year.

He reviewed, as was fitting, some of the progress made in medicine and surgery during the period he covered. He concluded, however, that no matter how great the advances made had been, the essentials in the art of medicine were unchanging, and that it would be a great misfortune, in spite of all the modern aids to diagnosis, if the simple or unaided methods of diagnosis, such as percussion, auscultation, and the like, should be neglected. It was pointed out that there had been noted a tendency on the part of the younger generation to neglect the simpler methods and to rely too exclusively on aids which might not be available at the critical moment. While delicate physical and chemical apparatus were necessary in the clinical laboratory, the results must be incorporated with those of other methods and

capable of application by the practitioner in the ordinary course of his work. The various methods should supplement but not supplant each other, and as we saw clearly only what we were prepared to see clinical vision should be sharpened rather than dulled by the light of science.

A similar situation exists with regard to scientific pharmacology. Sir David Ferrier insisted that this did not necessitate the abandonment of purely empirical methods which long experience had proved to be of value in the relief of suffering. There were many remedies now out of fashion, which were still relied on, and apparently on good grounds by physicians of ripe experience and sound judgment. Nor should the study of the scientific bases of medicine ever be divorced from the most thoroughgoing study at the bedside. The human body was a much more complex organism than that of the lower animals and infinitely more so than any mere physical or chemical compound. The living body was, as Prof. H. H. Dale had said, in many ways an essential partner in its own cure. The most suggestive part of Sir David Ferrier's address, however, was that which dealt with the psychical side of man and its influence on the physical side. The impulses and emotions by which he was swayed, constituted a factor which highly complicated the action of all the remedies of the *Pharmacopœia*. Though much valuable work had been and is being done in this direction, as yet we knew comparatively little as to the mode of origin and channels of transmission of these corporeal influences; but it was certain that the pleasurable emotions, such as faith and hope, exalted while the depressing emotions, such as fear, doubt and anxiety, depressed all the vital functions. How to promote the one and combat the other was often more a mark of therapeutic skill than a judicious selection from the *Pharmacopœia*.

It is assuredly wise to dwell on the fact that the essentials of the art of medicine are unchanging and that while progress in treatment and therapeutics has been made it is well not to discard all the old methods and drugs. After all, the gift of correct diagnosis gained partly by intuition and partly by experience backed by sound clinical knowledge are the most valuable possessions of a medical man whether he be specialist or general practitioner.

Many leading men of the medical profession, including Sir James Mackenzie, have uttered the warning that too great reliance should not be placed on laboratory methods valuable as they are. Laboratory methods should be the handmaidens or complements of clinical experience and not regarded as the sole arbiters or the last word and the only things which really mattered in making a diagnosis. The same may be said of modern drug treatment. Some of the old remedies have shown by the acid test of experience that they serve a useful purpose, in spite of the fact that it is not understood clearly how they act. Indeed, it is likely that drugs when they act successfully do not act directly, but indirectly by stimulating the natural forces of the body to defend it against the invaders. And it is becoming more and more evident that psychical influences are of the first importance in combating disease.

Fifty years of medicine have shown great progress but all the old fashioned views have not been overturned completely, in truth, many of these views appear to be in process of rehabilitation.

THE ETIOLOGY AND NATURE OF GOUT.

Gout is certainly as old as civilization, and yet, despite its antiquity, we must still admit with Aretæus the Cappadocian, that its secret origin is known only to the gods. Of a verity, as the illustrious Sydenham observed, "No very limited theory and no one particular hypothesis can be found applicable to explain the whole nature of gout." A confession not devoid of pathos seeing that he was a lifelong martyr thereto, albeit deriving solace from the reflection that the disorder "destroyed more wise men than fools." From the clinical viewpoint, Sydenham's classical description of gout is unsurpassed, but not until the isolation of uric acid by Scheele (1776), and its detection in tophi by Wollaston, did physicians begin to realize that in some obscure way the life history of gout was bound up with that of uric acid. But when Garrod (1848) revealed the existence of uric acid in the blood of the victims of gout, its presence therein seemed then and for long after an all sufficient explanation of its protean manifestations. In 1913, Folin and Denis introduced their exquisite colorimetric test and thereby established the fact that uric acid—in demonstrable amounts—is constantly present in human blood. Consequently, in gout there is a condition, not of uricemia, but of hyperuricemia. What is its significance? For, admitting that the blood content of uric acid in gout is above normal, nevertheless, the excretion of uric acid, save during acute attacks, rests within physiological limits.

Again, as to the assertion that the blood is surcharged therewith, we have the awkward fact as yet inexplicable on chemical or physicochemical grounds, that the bloodstream can hold in suspension far more uric acid than has ever yet been met with in gout, according to Bechhold and Ziegler no less than fifty mg. of uric acid to one hundred c. c. of blood serum before deposition tends to occur. On the other hand, urates are less soluble therein,

not exceeding two and five tenths mg. to one hundred c. c. How remote from the limit of saturation the highest figures observed in gout! What a large margin of solubility is still available! Again, the uric acid blood content in gout is far less than was formerly thought. Only by a few milligrams does it transcend that found in normal individuals. Can this slight disparity have such profound potentialities as to determine the incidence of gout? And this with the saturation point still so remote. The urates, too, being practically nontoxic, how difficult to conceive that the almost trivial excess of the uric acid blood content over the normal is adequate to produce the fulminan and dramatic phenomena of acute gout. All the more so when we realize that no constant relation has as yet been established between the uric acid content of the blood and acute attacks of gout. Again, no variations in the same apparently herald or accompany typical acute paroxysms; while attacks may occur with a subnormal uric acid blood content.

Confronted by these and other difficulties, Llewellyn holds that uricemia is not the cause, but the result of gout. Also that the fulminant character of the acute gouty crises postulates the intrusion of some other factor—more vital or biological.

Developing his theme he affirms his belief that gout is invariably inherited and that its hereditary transference consists in the transmission of a tendency to protein sensitization. He has the less diffidence, he says, in making the suggestion seeing that more often than not, gout develops on a soil already sensitized—as betokened by the fruit already borne in the shape of asthma, urticarial and eczematous eruptions, or some one or other of the toxic idiopathies now known to be often attributable to protein sensitization. Reflection upon the clinical interactions and alternations of articular gout with these disorders lends weighty support to Llewellyn's hypothesis. He advances very cogent reasons for his belief that the food idiosyncracies of the gouty are due to protein sensitization, and that the disturbances in nuclear metabolism are secondary thereto. He obviously has no faith in purin free diets. The salient point, he says, is not whether or not the diet be purin free, but does it contain the specific protein or proteins to which the particular gouty patient is hypersensitive? For, as he clearly shows, in gout as in asthma, every man is a law unto himself.

A true iconoclast, he goes still further in his exposure of the prevalent fallacies in respect to alcohol and gout. He boldly affirms his belief that whether it be malt liquors or wine, it is not their alcohol content that evokes gout. He suggests that in beer the responsible constituent is not the alcohol, but the hordenine or some other protein in malt. Again, that those in whom gout develops after consuming this or that wine are hypersensitive to one or other of the proteins contained in the different races of yeast cells, concerned in their fermentation. Or that they are sensitized to the protein substances introduced in the process of fining wines, i. e., such well established antigens as white of egg, casein, and skimmed milk. This eclectic attitude on the part of an authority of wide experience is most welcome. The marvel is that the notoriously erratic response of the gouty to different wines had not long since suggested a corresponding discrimination on the part of physicians in prescribing wines for these subjects. It cannot be denied that these reflections are not only highly original, but most illuminating.

Again, Llewellyn draws attention to the fact that lead may evoke gout, either through its ingestion, its inhalation, or its absorption by way of the skin or mucous membranes. Hence he pertinently asks, why should not the proteins of barley or other cereals act in like fashion? For, judging from statistics, gout is as common among coachmen, grooms, stablemen and farm laborers, as in draymen, malsters, brewers' laborers, and so forth. In other words, gout develops with significant frequency in those whose work involves the mere handling of grain. Now, cereal proteins, we know, may —by inhalation or absorption—induce asthma in some persons, then why should they not in other instances, like lead, evoke gout, and this by direct contact? May not the socalled gouty throat be the outcome of sensitization by direct contact of the proteins in malt dust or yeast spores? If so, it would explain why tonsillitis or pharyngitis in some and in others conjunctivitis or episcleritis so often usher in a classical outbreak.

Again, Llewellyn draws attention to the striking parallel that obtains between the arthritic and cutaneous phenomena of serum sickness in those of regular and irregular gout. He believes that the joint swellings of gout, like those of serum sickness, would be more accurately described as arthropathies, than as arthrites. He clearly shows that the evolution of classical gout presents many anomalies difficult to reconcile with the orthodox development of an arthritis. He holds that for the production of a true gouty or uratic arthritis there is required, not only a specific gouty soil, but an equally specific mode of pathogeny. Basing his contentions on Dale's researches he holds that the basal morbid mechanism responsible for gouty arthritis is one of vascular endothelial poisoning, and this latter the outcome of anaphylaxis—the responsible antigen being either of bacterial, animal, or vegetable origin.

Unquestionably, if we accept cellular sensitization as the basal pathological change in gout and that it achieves its malign effect through vascular endothelial poisoning, the conception does dissipate much of the mystery attaching to gouty metastases. For, obviously on this basis the symptoms of gout will naturally vary with the regional distribution of the circulatory stasis, and the structure and function of the organ or tissues implicated.

Time and space forbid further discussion of this brilliant contribution. We would, however, add that, like Llewellyn, Chauffard, of Paris, discussing the acute crises of gout finds them reminiscent of acute attacks of asthma, migraine, and urticaria—"all paroxysmal illnesses and allied to gout by certain clinical affinities." Basing his remarks on the researches of Widal, Chauffard looks on acute gouty paroxysms as precipitated by a disturbance of the colloidal equilibrium, very similar to anaphylactic reactions, with special modification in the number and percentage of the leucocytes, of the blood pressure, and albuminoid content of the plasma. "I think," he says, "that it is along these lines that we must search for the explanation for the acute crisis of gout."

THE SIGNIFICANCE OF HYPOTENSION

Much is talked and written of hypertension nowadays but comparatively little is heard of hypotension. As a matter of fact, although overshadowed by high blood pressure, low blood pressure is equally as much of a symptom and is associated with almost as many abnormal conditions as and occasions perhaps more inconvenience than high blood pressure, except when this is extreme. It would be possible within the limits of an editorial to run over the various conditions which may cause low blood pressure, but there is little doubt that the defective working of the internal secretions exerts a considerable amount of influence upon its causation.

A diminished secretion of the adrenals is likely to bring about a lowered pressure. In Addison's disease, for example, where the glands cannot function to their full capacity on account of their diseased condition, this happens. In the menopause there may be an increase or decrease of blood pressure. In many of the cases where a hypotension exists the symptoms have been allayed by the daily use of corpus luteum extract of ovarian substance with a resulting increase of pressure. While it is difficult to say how the hypotension came about, it may be suggested that the diminished ovarian function has temporarily upset the secretion of the adrenals, the ones which have a distinct effect on pressure and that when the lacking ovarian substance was supplied equilibrium was reestablished. Many of the socalled nervous derangements of women are characterized by low pressure. It is likely that here, too, we may be dealing frequently with disturbances of internal secretions.

Certain it is that raising the pressure generally relieves the symptoms, such as headaches, mental depression and loss of energy and vitality. In many of these cases, except in those indeed in which the disturbance is obviously of nervous origin, it is well to consider defective working of the internal secretions and glandular therapy. It may, however, be noted that subnormal blood pressure is more often an indication of derangement of the vasomotor centre than of cardiac impairment. May not the primary cause often be constipation, intestinal stasis resulting in a toxemia which prejudicially affects the smooth working of the internal secretions and thus affecting the nervous system, a prominent symptom of which is a lowered blood pressure?

If this is so the rational treatment of hypotension is to rid the system as far as is possible of the circulating poisons, by suitable diet and by bringing the functions of excretion and elimination into proper working order and perhaps by using certain glandular preparations. While hypotension has been neglected by the medical profession, it has a significance, although its significance cannot be always determined. The subject is one which will amply repay a close study and throw light upon many now obscure points.

THE AMERICAN HEART ASSOCIATION

Although the American Heart Association is less than five years old, it had, at the beginning of 1924, forty-eight clinics with a total of 6,879 patients in attendance, and was cooperating in its work with thirty-two of the hospitals of New York City.

The association was formed in 1915 as an outgrowth of the work for handicapped workers whose hearts could not keep pace with their ambitions or their need of self support, and with encouragement from the field of public health, where studies of the increase in heart disease showed the need of a new preventive and relief service. The first efforts of the society, which then bore the name of the New York Association for the Prevention and Relief of Heart Disease, were directed to diagnosis of the sick and education of the well, with such success that today the cardiac clinic is recognized as an indispensable part of every well developed hospital or dispensary. The United States has 140 such clinics. It was not until 1922, however, that during a meeting of the American Medical Association it was decided to form a national body. A committee was appointed to consider the type of organization best suited to the purposes of the work and to take the

steps necessary to its formation. This committee consisted of Dr. Paul D. White of Boston, Dr. James B. Herrick of Chicago, Dr. Joseph Sailer of Philadelphia, Dr. Hugh McCulloch of St. Louis, and Dr. R. H. Halsey and Dr. Lewis A. Connor of New York. It was decided that no attempt at an organic union of local associations with the national body should be made, but that their interest and support should be secured by providing for the enrollment of their members as voting members in the national association by the payment of nominal dues.

The body was incorporated, and in the same year cardiac children were placed in fresh air homes for the first time. During the year forty thousand pieces of literature were distributed and forty-two lectures given on heart disease. Trade classes were started in 1923 as an annex to the Manhattan Trade School, to which eighty-two girls were admitted. Many of these girls came to the classes as truants, originally excused from school because of heart conditions, pampered by overindulgent parents, and careless and indolent in their attitude toward life. In 1924 boys of the same type were added. A thorough examination of the children in one of the city continuation schools, including seventy-one boys and 837 girls, disclosed the fact that fifty-four had some definite form of heart disease. During the same year the Committee on Schools completed a survey of the work for cardiac children in the public school system, and made the recommendation that it would be better to have more thorough medical supervision of all school children, including many with slight and often curable heart trouble, than it would be to expend funds as at present on special classes of cardiac children where they are segregated from normal, healthy children.

The Associated Clinics came into the association in 1924 as a committee of the association, and has formulated uniform standards for clinics, held meetings for social service workers in cardiac clinics, and done much other work.

FOOD IN HOUSE REFRIGERATORS

A study of bacterial changes in relation to temperature and humidity in relation to food in house refrigerators has recently been made by the departments of biology and of foods and cookery of Teachers College, Columbia University. A report of this study has been contributed to a recent issue of the *Nation's Health* by Jean Broadhurst and Mary B. Van Arsdale. In the experimental work special consideration was given, first, to the range and constancy of the main factors, temperature and humidity, in three different types of refrigerators; and, second, to the related variations in the bacterial content of foods under known temperature and humidity conditions.

To summarize the conclusions it was found that, 1, in house refrigerators with constant air circulation, fairly constant temperature and relative humidities may be obtained; 2, continuous circulation of the refrigerator air is essential to secure throughout the lowest temperatures and the lowest relative humidities of which a given refrigerator is capable; 3, the temperatures obtained in many house refrigerators are distinctly favorable to the multiplication of bacteria and other microorganisms; 4, bacterial multiplication varies directly with refrigerator temperatures rather than with relative humidities, the depression due to low relative humidities being more than overbalanced by attendant high temperatures.

Five recommendations are therefore made to insure sanitary refrigeration in the home: 1, house refrigerators should be constructed so as to insure constant and complete circulation of air. No dead spaces nor air pockets should be permitted to exist; 2, the ice chamber should be large and kept well stocked; the larger the ice surface, the more contact there is with the circulating air, and the greater the effect upon the air; 3, thermometers should be supplied for the warmest and the coldest shelves at least. Milk should be kept at temperatures below 45° F. Temperatures of 60° or more mean that the ice box is acting as an incubator rather than as a refrigerator; 4, since cold air is relatively heavier than warm air, careless management of the doors may allow much of the cooled air to fall out of the box. Watch the thermometer to verify this; 5, milk and similar foods should be kept as cool as possible. The warmer the shelf and the longer the stay in the refrigerator, the greater the bacterial content and deterioration of the food. Such bacterial changes are not without danger to the consumers, especially babies, using stale milk.

HEALTH DRIVE IN BELLEVUE-YORKVILLE DISTRICT

To add twenty years to the span of average life in the community is the avowed aim of a health demonstration in the Bellevue-Yorkville district in New York City, to be undertaken by the Milbank Memorial Fund. This section of New York City is situated on the East River, extending to Fourth Avenue, and bounded on the North and South by Sixty-fourth Street and Fourteenth Street respectively. The demonstration will be carried on with the cooperation of hospitals, social organizations, clinics, the city's welfare agencies, and other organizations and institutions standing for health and welfare purposes. Approximately two million dollars will be spent in financing the drive. All agencies of the above type willing to cooperate will meet and elect a smaller group to direct the undertaking and appoint an executive board. They will submit their budgets to this committee for advice as to expenditures so that duplication will be avoided. In cases where financial aid is needed, appropriations will be made to both public and private agencies in addition to the amount they are already spending, but they will not be permitted to decrease these expenditures, the appropriations being made only on the condition that the resources of the agency are such as to prevent it from providing adequate service from its own funds.

News Items.

Memorial Service for Dr. Robinson.—A service in memory of the late Dr. Andrew Rose Robinson will be held at the New York Polyclinic Hospital and Medical School on Sunday, December 7th, at four o'clock.

New York Tuberculosis Conference.—The third annual meeting of organizations interested in tuberculosis was held in New York on November 20th, sponsored by the New York Tuberculosis Association.

Institute for Midwives.—An institute designed to raise the standard of midwives was recently held by the New Haven Department of Health and the state department of health.

Bulletin of Surgical Clinics.—An arrangement has been made for posting each evening on the first floor of the Academy of Medicine, an announcement of the surgical clinics to be held the next day in the hospitals of New York.

Medical Society to Include Dentists.—Dentists may be admitted as associate members in the Philadelphia County Medical Society. The first joint meeting of physicians and dentists will be held at the College of Physicians, December 12th.

George Robert White Fund Health Unit.—The dedication of the George Robert White Fund health unit, at Baldwin Place, Boston, was dedicated on November first. The will of Mr. White provided five million dollars to Boston for the creation of works of "public utility and beauty." Dr. Charles V. Wilinsky will be in charge of the centre.

Convalescent Facilities.—A conference has recently been held at the invitation of Dr. Frederick Brush of the Burke Foundation, to discuss facilities for the convelescent care of colored patients. As a representative of the Sturgis Fund, Dr. Brush announced a gift from the fund of one thousand dollars as a nucleus for meeting this need.

Aerial Hospitalization.—Colonel Uzac, director of the medical service, French War Ministry, and Colonel Picque, professor of anatomy of the Bordeaux Faculty of Medicine. presented an exhibition of motion pictures showing the advantages of aerial transportation of the sick and wounded, in a meeting held at the Army and Navy Club of New York, November 24th.

Eye Institute at Johns Hopkins.—The trustees of Johns Hopkins University have joined the Wilmer Foundation in a campaign to establish a three million dollar endowment for an eye hospital and school, for treatment and research. It will bear the name of Dr. William Holland Wilmer, of Washington, and will be directed by him. One million dollars are to be devoted to the building and equipment, the free hospital beds, and the teaching of ophthalmology. Two hundred thousand dollars was contributed some time ago by friends and patients of Dr. Wilmer, incorporated as the Wilmer Foundation.

New York Academy of Medicine.—The following nominations for officers have been made by the New York Academy of Medicine: president, to serve two years, Dr. George E. Brewer; vice-president, to serve three years, Dr. Charles A. Elsberg and Dr. Frederic T. Van Beuren; recording secretary, to serve three years, Dr. Fenwick Beekman; member of committee on admission, to serve five years, Dr. Arthur M. Wright; member of library committee, to serve five years, Dr. Russell L. Cecil; trustee, to serve five years, Dr. George David Stewart; the election will take place at the regular December meeting.

Gorgas Memorial.—There are at present being organized governing committees for the furtherance of the Gorgas Memorial—on the basis of one hundred members to every million population in each state; seventy-five per cent. of the personnel consisting of medical men. These state committees in cooperation with the national executive committee will supervise the permanent activities of the memorial. An endeavor is being made to raise an endowment of five million dollars, the interest being utilized for carrying on the work. Founder members of the state committees are requested to subscribe one hundred dollars, and each member of the state committee is to be a contributing member. When the medical organization is complete, a general appeal for funds will be made. The memorial is primarily a medical movement.

Journal Discontinued.—The *Journal of Medical Research,* published for many years at the Boston City Hospital, has been discontinued. It will be succeeded by the *American Journal of Pathology.*

Dental Exhibit. — An elaborate exhibit on mouth hygiene is being held at the old Astor Library building, arranged by the Allied Dental Council. There has been a weekly average of twenty thousand visitors.

Hospital Fund Map.—The United Hospital Fund has issued a map giving the location of the hospitals of greater New York, both members and nonmembers of the Fund, as well as dispensaries, health department stations, etc.

New York Skin and Cancer Hospital Alumni.—Alumni of the New York Skin and Cancer Hospital and of its postgraduate school are requested to send their present professional office addresses to the secretary of the reorganized alumni association.

New Editor Appointed.—Dr. Henry O. Reik, former president of the American Institute of Medicine and editor of the *International Medical and Surgical Survey* has been appointed editor of the *Journal of the Medical Society of New Jersey,* succeeding the late Dr. David C. English.

Lecture by Doctor Draper.—At a meeting of the American Stomatological Association to be held Thursday, December 11th at 8:30 p. m., a paper will be read by Dr. John W. Draper of New York, on "Stomatology and Preventive Surgery." Discussion will be by Dr. Redford K. Johnson of New York and George C. Fahy, D.D.S., of New Haven.

Tuberculosis Health Crusade Awards.—The nine silver cups donated by the National Tuberculosis Association as awards to states, counties, and cities for high standing in the Modern Health Crusade work have been awarded, four to Iowa, two to Florida, and one each to Massachusetts, Oklahoma, and Wyoming. The cup for cities of 100,000 population and over was presented to Oklahoma City.

Endowment for University of Rochester.—Gifts of $2,500,000 from George Eastman and of $1,000,000 from the General Education Board of the Rockefeller Institute are announced as part of a campaign for endowment of the University of Rochester. Alumni have nearly reached their goal of raising $1,000,000. The school of medicine, which will admit its first class next September, is building on land adjacent to the Oak Hill site.

Psychiatric Centre.—Arrangements have been completed for the building of a psychiatric centre for research and treatment of patients, by cooperation of the State Hospital Commission and the Joint Administrative Board of Columbia University and the Presbyterian Hospital. The new institute will be built on the plot of land at 165th street and Broadway, on which other buildings of the medical centre of Columbia and the Presbyterian Hospital group are to be built. It will replace the institute and hospital now located on Ward's Island. There will be beds for from one hundred and fifty to two hundred patients, selected as cases of scientific interest. The State Hospital Commission is planning to expend at least $1,500,000 and will make such a recommendation to the Legislature in January. This sum is available under the bond issue for state hospitals.

Personal.—Dr. George L. Meylan, of Columbia University, represented that institution at the celebration of the fiftieth anniversary of the founding of the Ecole Polytechnique of the University of Brussels, November 20th.

Dr. Nicholas Kopeloff, of the Psychiatric Institute of the Manhattan State Hospital, has returned to this country after a year's research at the Pasteur Institute, Paris, and other institutions.

Dr. George H. Simmons, for more than twenty-five years editor of the *Journal of the American Medical Association,* and now editor and general manager emeritus, has started on an extended trip to Europe and India.

Dr. Thomas F. Abercrombie, Atlanta, Georgia, has returned from the world conference on preventive medicine at The Hague, to which he was a delegate from this country.

Dr. Frederick W. Derby, of Boston, has received an appointment as ophthalmologist of the Boston department of health.

Dr. Henry A. Stone, of Philadelphia, has begun eighteen months' service at the Rockefeller Foundation Hospital of Peking, China.

Foreign Correspondence.

LONDON LETTER

(From our own correspondent)

London, *October 27, 1924.*

JUBILEE CELEBRATIONS OF THE LONDON SCHOOL OF MEDICINE FOR WOMEN

On the evening of October 24th there assembled in the Guildhall, London, a remarkable gathering to celebrate the jubilee of the London (Royal Free Hospital) School of Medicine for Women attached to the University of London. The particular celebration took the form of a dinner and as Miss Aldrich Blake, dean of the school, said in graceful acknowledgment of the hospitality of the City of London Corporation in placing the Guidhall at the disposal of the women doctors and their guests, it was an historic privilege to dine in that historic hall on such an historic occasion. It is understood that this is the first time that a function of this kind, with women doctors as hosts and men as guests, has been held in the venerable building. Dean Inge, of St. Paul's Cathedral, known throughout Great Britain as the gloomy Dean on account of some pessimistic views on things in general but who is easily one of the best writers and speakers in the country, proposed the first toast "Women's Work" and said in part that the art of relieving suffering seemed to come naturally to women and brought out the best side of their nature. It was the literal truth that the man was unhappy who, when he was sick or weary, had no woman at his side. He could not speak from personal experience as to the skill of women in the medical profession. He was ashamed to say that he had reached the age of sixty-five years without hardly ever consulting a doctor. In some operations the small and delicate hands of women could have a distinct advantage over those of men. At the same time they must forgive him for saying as a mere man, that the highest and best work of a woman was that of a wife and mother, and when he looked at the troop of young women he saw making their way into that hall that evening, he hoped they were not all sworn to celibacy.

Lady Barrett, who is one of the most distinguished graduates of the Women's School of Medcine, said in part that most people were coming to see that public work done by one sex was rather like work done by a person blind in one eye. Two eyes were required, looking at things from slightly different angles. In time to come the whole world would, she thought, realize that what these difficult times required was the vision that came from complete humanity, and not the vision that came from the work of either one sex or the other.

Mrs. Fawcett, widow of the late well known blind postmaster general and sister of Dr. Garrett-Anderson, one of the founders of the London School of Medicine for Women, and herself one of the ablest women of the country, in responding quoted a speaker, who she said was as distinguished a man as Dean Inge, at a dinner given by the International Federation of Medical Women last July. He said that he had from long observation discovered that the main difference between men and women doctors was that medical men paid great attention to symptoms, while medical women aimed rather at discovering the causes and prevention of disease. She thought that was the most tremendous compliment that could be paid to women doctors.

Professor G. A. Gardner, Vice-Chancellor of the University of London, proposed the toast of the London School of Medicine for Women and Miss Aldrich-Blake, dean of the school with whose name it was coupled, responded. Professor Winifred Cullis proposed "the Chairman." Dr. Scharlieb, in her reply, said that if Dr. Sophia Jex-Blake were with them that night she would rejoice to see the abundant fruit of her labors. She thought she would bid them consider three things: The friends of the school, the future of the school and the funds of the school. They were not anxious about the future of the school. The puny infant of 1874 had thriven; convulsions and teething disasters were no longer to be feared; the spirit of the school was adolescent; it was sound and vigorous enough to survive the psychological troubles of that epoch and it gave promise of fruitful maturity. The future of the school was in the hands of the students. Those who knew them best felt assured that they would be in all respects worthy of the vocation to which they were called. All would not be easy, but the end was sure, and the medical profession might be satisfied that the women would play the game and maintain its good traditions.

Nearly 600 were present at the dinner, among whom were Sir Humphry Rolleston, president of the Royal College of Physicians, Sir George Newman, chief medical adviser to the Ministry of Health, Sir Edward S. Schäfer, professor of physiology at the University of Edinburgh.

On the afternoon of October 25th, Princess Beatrice and Princess Arthur of Connaught were at the Thanksgiving Service "for opportunities for training, work and service opened to women in the last fifty years," held in St. Paul's Cathedral, in connection with the jubilee celebration of the London School of Medicine for Women. About three thousand women, representing every profession and calling, were present. The scene in the cathedral was deeply impressive. At the opening of the service a procession representing the links which bind the past to the present generation was formed, and moved up the aisle. Among these were Dr. Mary Scharlieb, president of the school; Mrs. Henry Fawcett, walking with her niece, Dr. Louisa Garrett Anderson. The nearest surviving relatives of Dr Sophia Jex-Blake, her two nieces, Miss Henrietta Jex-Blake, principal of Lady Margaret Hall, Oxford, and Miss Catherine Jex-Blake, former head of Girton College, Cambridge. The procession also included The Countess of Minto, representing the medical and nursing services of India, Professor Sir Charles Sherrington, president of the Royal Society; Lord Dawson of Penn, Lord Riddell, president of the Royal Free Hospital; Dr. A. Louise McIlroy, professor of obstetrics and gynecology Royal Free Hospital; Lady Barrett, consulting physician to the Royal Free Hospital; Dame Janet Campbell, Ministry of Health; Dr. James Berry

consulting surgeon to the Royal Free Hospital. The sermon was preached by the Bishop of Lichfield, who referred to the proposal to erect at the London School of Medicine a lasting memorial to the three pioneer women doctors, Dr. Elizabeth Blackwell, Dr. Elizabeth Garrett-Anderson and Dr. Sophia Jex-Blake. It is proposed to raise an endowment fund of £50,000 to endow three chairs, in anatomy, physiology and pathology in memory of these three women. It may be said that the fund now stands at £26,000 and that donations will be gratefully accepted from those interested in women's work and especially women's medical work in America.

COUNTRY HOME FOR SHELL SHOCK PATIENTS

Designed to afford individual treatment to men who have received shocks to their nervous systems by war experiences, the Sir Frederick Milner Home at Beckenham near London has been formally opened by the Duke of Connaught. It is a country mansion with several acres of lawns and sheltered wooded surroundings and the Ex-Service Welfare Society, who secured it for this purpose, could not have chosen a more beautiful locality. Sir Frederick Milner, chairman of the movement, has been imbued throughout with the necessity, on grounds of common humanity, for some provision being made for men on the mental border line who might otherwise have to enter an asylum or remain in the homes or relatives or friends with no knowledge of the treatment required for such cases. It is a comparatively small effort, but if the twenty patients for whom there is accommodation at Beckenham at one time, can be so benefited by treatment as to be able to once again resume the duties of life, others will take their place, and in the end the expenditure will have been fully justified. There are about six thousand ex-service men in asylums, and a large proportion of this number would have better chances of recovery, if the Sir Frederick Milner Homes could be multiplied.

NEW EDITOR FOR THE PRACTITIONER

Sir W. Arbuthnot Lane, M.S.Lond., F.R.C.S. Eng., has accepted the editorship of the *Practitioner*.

GENEVA LETTER

From our own correspondent

GENEVA, *October 10, 1924.*

THYMECTOMY

Dr. E. Bircher, of Aarau, Switzerland, a surgeon of large experience and whose opinion is always worthy of consideration, has followed the effect of thymectomy in ten children in whom tracheostenosis seemed to require the removal of large or small portions of the gland. The mental functions in these subjects were also disturbed, while it was likewise evident that bone growth was interfered with, because the appearance of the centres of ossification was delayed from two years and six months to six years. Height was interfered with only in those children who had been subjected to operation before the age of seven years. Generally speaking, Bircher's results tally with Matti's animal experiments, other than for the fact that the diaphyses in the children were practically unaffected. No changes were detected in the generative organs. Opotherapy was of no avail. Bircher is conservative in regard to operations on the thymus and believes that in stenosis of the trachea, displacement of the gland may be sufficient to overcome the condition.

HIGH BLOOD PRESSURE

There is no doubt that the old view that persistent rise of blood pressure is invariably caused by renal disease is losing ground on the Continent. Recent work by competent men has revealed the fact that there are instances of vascular hypertonus in which the kidneys are unaffected regardless of arteriosclerotic changes in other viscera, while quite marked changes in the renal vessels may be found, although high blood pressure was never noted during life. Hence, the primary character of hypertonus is a rise of arterial pressure, but whether this is the result of somatic or psychogenic factors is still a moot question. Some maintain that there is a good deal to say in favor of the rise in pressure being dependent upon vascular spasm and cases have been recorded in which this rise of blood pressure had lasted for a long time, while later on repeated examinations of the patient failed to reveal vascular hypertonus.

Quite recently, experiments were undertaken in Germany, by Kylin, to ascertain to what degree the vascular hypertension might vary in identical conditions on different days and times of day. The patients were kept in bed during all the duration of the examination—from eight to ten days—the pressure being taken between nine and ten a. m. and five to six p. m. The cases were divided into three groups: 1, socalled mild nephrosclerosis, 2, socalled diffuse acute glomerulonephritis, and 3, other affections, such as gastric disorders and neurasthenia. In the latter group, in which there was no rise of pressure, the readings varied only to the extent of ten to fifteen mm. Hg. in the course of twelve hours, and as a rule they were lower in the morning. The extent of these variations is regarded by Kylin as indicating a psychogenic vasoconstriction. In acute glomerulonephritis, which is generally the result of some acute infectious process, the blood pressure suddenly goes up accompanied by albumin, casts, and red blood cells in the urine.

I would also point out that at the Fever Hospital at Stockholm, Lindberg likewise noted that in scarlet fever the pressure began to go up about a week before the development of the renal involvement and was likewise accompanied by an increase in weight of the patient, thus indicating commencing edema. It therefore would appear that peripheral symptoms, such as increased arterial tension and edema, develop before the true renal symptoms are manifest in the urine, and it is important to note that in none of the cases of renal complications accompanied by vascular hypertonus was there any evidence of the primary morbid process started in the kidneys; on the contrary, the renal process appeared to depend upon the vascular process.

DIAGNOSIS OF DIPHTHERIA

The diagnosis of diphtheria is extremely simple or of great difficulty according to the given case, the

reason being the polymorphism of buccopharyngeal diphtheria. Any medical student can diagnose the false membranes of diphtheria, and although rather uncommon—scarlet fever being excepted—other bacteria, such as the streptococcus, pneumococcus, and tetragenus, may produce membranes on the tonsils. These anginas must be clinically distinguished from diphtheria and long ago Cadet de Gassicourt and other observers vainly attempted to confer a peculiar physiognomy upon them. They may be accompanied by enlarged lymph nodes, mucous secretions from the nostrils, etc., but they almost always respect the larynx. On the other hand, Dr. Reh has recently observed a certain number of anginas in the service of Professor D'Espine, of Geneva, which clinically were diptheria, but bacteriologically were due to the pneumococcus.

Nevertheless one must not be too quick to admit the absence of Loeffler's bacillus simply because it is not detected in the membrane or cultures. Dufourt, of Lyons, after much research work has come to the conclusion that in these socalled pseudodiphtheritic cases Loeffler's bacillus quite frequently is hidden among the varied bacterial flora found in these cases and antidiphtheritic serum will be found effective in clearing up the membranes.

FRENCH VITAL STATISTICS

It is worthy of note that the French birth rate is increasing. The returns of births, deaths, and marriages in France for last year show that the excess of births over deaths has increased.

In 1923 the excess was 94,871, or 24 in 10,000 inhabitants, as against an excess in 1922 of 70,579, or 18 in 10,000 inhabitants. The actual number of births was 761,861 in 1923, as compared with 759,846 in 1922. The birth rate in each case works out at 194 births in 10,000 of the population. In addition there were 33,591 children stillborn in 1923, as against 34,854 in the previous year. The total number of deaths in 1923 was 666,990, as compared with 689,267 in 1922. This means a reduction in the death rate from 176 in 10,000 of the population in 1922 to 170 in 10,000 last year. In 1923 the number of deaths of children less than one year old was 73,283, as against 64,889 in 1922, showing a slight increase in the rate of infant mortality. Marriages in 1923 were less numerous, being 356,501 as compared with 383,220 in 1922. These figures correspond respectively to rates of 182 marriages and 195 marriages per 10,000 of the population. There were 23,599 divorces in 1923 and 27,684 in 1922.

MORTALITY FROM OTITIS MEDIA

Out of a total of 42,000 cases of purulent otitis of the middle ear treated at the Otological Clinic at Bäle, from 1898 to 1917, there were fifty-eight deaths. The recent report from Bezold's Clinic of a total of 40,000 cases gives seventy-three deaths, a slightly larger mortality. Death from acute suppuration of the cavity of the tympanum occurs more frequently than when the process is chronic, leaving aside cholesteatomata, because the latter considerably darkens the prognosis as it causes four times more deaths than acute otitis. Otitis secondary to general diseases, such as scarlet fever, diphtheria, etc., is always serious, and the gravity, according to Schlitter, is not invariably in direct proportion to the type of causal bacteria present.

ENCEPHALITIS LETHARGICA

The excellent results obtained by Prof. Carnot and Dr. Blamontier, of Paris, in the treatment of lethargic encephalitis with intravenous injections of sodium salicylate, caused Dr. Berrien, physician to the Hospitals of Algeria, to try out this treatment in cases of typhus fever. Forty-three cases were treated with encouraging results. The injections were given every day, at the dose of from five to six grams, in a ten per cent. solution of distilled water. In this degree of dilution no instance of thrombophlebitis occurred. The injections were given until an improvement took place in the temperature and general phenomena. In some instances, when apyrexia had ensued, the administration of the sodium salt was continued *per os*. Myocarditis is a contraindication for this treatment; for this reason the heart must be carefully examined before any injection is given. If there is only slight cardiac weakness, injections of sodium salicylate may be prudently resorted to, but should be given slowly and in fractional doses, while prophylactic injections of adrenalin, camphorated oil, etc., for controlling cardiac failure are indicated. The sooner this treatment is given the less likely are progressive azotemia and terminal cardiac collapse to arise.

CEREBRAL HEMORRHAGE AND HIGH BLOOD PRESSURE

The time of life for high blood pressure—which is not invariably that of old age—is likewise that of cerebral hemorrhage. Dr. Dumas, of Lyons, has shown that high blood pressure does not alone account for cerebral hemorrhage and that encephalitis plays an important part. If high blood pressure is not sufficient to produce cerebral hemorrhage, it at least regulates the intensity and for this reason is an important factor in the prognosis. Very high blood pressure in relatively young subjects will end in fulminating apoplexy due to ventricular inundation. In older subjects with lower pressure the ictus is milder and apt to recur several times, death usually being the result of intercurrent complications and not to the cerebral hemorrhage which is small in amount. During the ictus and the days following it the blood pressure should be carefully measured. A marked drop indicates a hemorrhage of considerable amount and if the pressure does not become balanced or if it continues to drop, the patient will die in coma. If, on the contrary, the drop in pressure is slight, and if it becomes slowly reestablished without a rise of temperature, the subject will probably survive his lesion.

LETTER FROM SOUTH AFRICA

(From our own correspondent)

Pietermaritzburg, Natal, *August 16, 1924.*

TRAINED NURSES HOLD CONGRESS

At the Congress of the South African Trained Nurses' Association, held at Bloemfontein under the presidency of Miss M. G. Thomson, general president of the association, the Union Medical and Pharmacy Bill came under discussion at the second day's meeting on August 13th. Much regret was expressed

that the bill, again introduced into the Union Parliament this year, had been shelved again by the House of Assembly. The majority of the nursing delegates present expressed their support of the principle of the representation of the Trained Nurses' Association on the medical councils, and also decided upon the designation to be used in the bill in describing a nurse. A course of action was agreed upon in the event of the medical bill not being again brought before Parliament. Opinion favored a separate bill—a nurses' bill—and it was unanimously decided that in the event of the dropping of the medical bill nurses be described as registered, instead of certified as trained. The congress unanimously agreed to a resolution providing for nursing representatives on the four existing provincial medical councils.

CHILD WELFARE

The chief interest of the day's proceedings, however, was in a symposium on the child welfare movement. Instructive addresses were given on the care, training and scientific feeding of the infants and the proper training of the mothers in the course of maternity; and the congress placed a high value on the establishment of mothercraft training centres in the union. Special emphasis was laid on the plight of the country districts as regards the training of the mothers in the care of their children. Strangely enough, in South Africa infant mortality was reported to be far higher in the country districts than in the towns. This blot was to be removed, said Miss Winter (Northern Transvaal), purely through the medium of properly trained midwives.

VENEREAL PATIENTS

The congress on Thursday condemned the line of action of the probationers at the Addington Hospital, Durban, in their alleged refusal to nurse venereal disease cases. It was, however, represented by Miss Kenyon (Durban) that the probationers had not actually refused to nurse these cases, but had petitioned His Honor the Administrator of the Province in connection with the matter.

POSTGRADUATE COURSES

At the same sitting the following resolution was carried: "That postgraduate courses for nurses be arranged by the universities or hospital buildings of Capetown and Johannesburg, or elsewhere, in the hospitals attached to the medical schools."

Dr. Tremble, while supporting the idea, said that he did not see that they could have university nurses until nursing was part and parcel of a university curriculum. He suggested the taking of alternate summer and winter courses at Capetown and Johannesburg respectively, to include three lectures a week, with demonstrations and so on, and with facilities for study in special departments—the operating theatre for example—the latter being at the discretion of the matron of the hospital. The courses, suggested Dr. Tremble, should last six weeks, and the fee for attending each one six guineas for each nurse. The resolution was carried.

A PENSION FUND

The following resolution was carried: "That this association recommends that a Pension Fund for Nurses be instituted which will ensure a pension to every nurse at retiring age of £120 per annum after a complete term of service, and while not entailing a burdensome deduction from the salary of any nurse as a contribution to such fund; that provision be made for refunding at least her own contributions to the pension fund to any nurse who resigns or retires voluntarily before reaching pensionable age."

INSTRUCTIONS FOR HELSINGFORS

The congress then considered the subject of the International Conference of Nurses to be held at Helsingfors, Finland, some time next year, and at which nursing associations in all parts of the world would be represented. The delegate of the South African Trained Nurses' Association at the Helsingfors conference is to be Miss B. G. Alexander. One of the matters to be dealt with would be what is known as nonnursing duties in the training of nurses.

Miss Alexander quoted from a report published in the United States defining nursing and socalled nonnursing duties. It seemed, she declared, as if there were an effort being made to create two classes of nurse—one a sort of university student, who attended the dressings, administered hypodermics, and so on, and the other one who had to do the rough work, and attend to the ordinary functions of the body. In her opinion, there should be no work that was beneath her dignity, if she intended to do real nursing. Their duty was to give the sick public the best nursing possible. She did not agree with the two grades mentioned, and thought that the best solution of the difficulty lay in the acquirement of better pay for qualified nurses.

It was urged by members of the congress that it would be most undesirable to have two such grades as those suggested—theoretical and practical—and that if that were done it would strike at the very root of the profession. The congress instructed its delegate to take up this question at Helsingfors.

Letters to the Editor.

THE VALUE OF LIGHT

CINCINNATI, OHIO, *October 29*, 1924.

To the Editor:

The editorial on the Value of Light, which appeared in the October 15th number of the MEDICAL JOURNAL AND RECORD has just been called to my attention.

In answer to your question regarding the lamp used by Ernst, it is fair to assume, according to the figures which he states, that the spectral distribution of the light used is more nearly like that of sunlight than is that which comes from lamps commonly used in this country.

A lamp has been designed and used, which does produce a spectrum equal in extent and intensity to that of sunlight at an altitude of four thousand feet. This work has been done by Dr. Brian O'Brien, research physicist to the Buffalo Tuberculosis Association, stationed at Perrysburg, N. Y.

I trust that this fully covers the questions which you rightfully considered of importance.

R. PLATO SCHWARTZ.

Book Reviews

THERAPEUTIC SUGGESTIONS

Clinical Memoranda for General Practitioners. By A. T. Brand, M.D., and J. R. Keith, M.D., of England. Second Edition, 1924. New York: William Wood & Company, 1924.

The object of the authors in writing this book has been to gather into a small sized volume of 375 pages, including the index, very many suggestions for diagnosis and for treatment of all kinds of diseases and conditions. Obviously the aim is too general and the objects aimed at too diffuse for any author, or authors, to produce a book of much scientific value. Some of the advice given is very primary, and although the authors state that it is aimed especially to help the young physician who is commencing practice, still some of the instructions given must have been acquired by him before graduation.

The authors have placed in this book a large number of suggestions for treatment which they have obtained from medical journals and books, the majority of which treatments they have not personally studied and therefore have not carefully evaluated. They have outlined the successful results from some therapeutic measures by relating clinical histories, but the number of such cases is so small and the clinical histories are so meagre that therapeutic or statistical conclusions could not be thus arrived at.

MODERN THERAPY

Modern Methods of Treatment. By Logan Clendening, M.D., Assistant Professor of Medicine and Lecturer on Therapeutics, University of Kansas. St. Louis: C. V. Mosby Company, 1924.

The author has aimed to present a textbook that will be practical for advanced medical students. In his preface he severely criticizes available books on the subject of therapeutics. Therefore he has aimed to overcome in his book his six criticisms of available books.

The part devoted to prescription writing and methods of administration and a brief description of drugs takes up the first 150 pages.

The author's classification is not dissimilar to that offered by Osborne's book on *Principles of Therapeutics,* although somewhat more based on the action of a drug rather than on its actual therapeutic use. These classifications are much more practical than any other that can be offered.

There is an interesting presentation of the chronology of anesthesia, and the subject of anesthesia is very ably discussed.

His history of the use of digitalis is interesting, but one wonders if a book of this practical character should give so much space to historic discussion. It is better to base the action of drugs on laboratory experience rather than on historical clinical experience. The discussion of digitalis, however, is excellent.

In the discussion of drugs used to act on the respiratory tract, one must disapprove of the instillation into the glottis of a combination of menthol, iodoform, and olive oil, for chronic bronchitis or for asthma. The mild suggestion that adrenalin "may" be tried in asthma, where it is so frequently efficient, and the statement that "morphine and atropine are the surest of drugs for asthma" tend to urge too early and too careless resort to morphine in this distressing complaint.

The chapter on vaccines and serums is up to date and good. The chapter on dietetics is complete, including a long discussion on infant feeding. Also there are complete food tables.

While typhoid fever patients should be fed and not starved, the milk diets urged by some are not, in the reviewer's opinion, the best for a typhoid patient. Too much emphasis is placed on milk, and it is very generally a mistake in typhoid fever, as tending to cause tympanitis, which is the most serious thing that can happen to a typhoid patient as not only interfering with breathing and causing bowel distress, but vastly increases the danger of hemorrhage and perforation.

Part II is devoted to applied therapeutics for the various diseases. The treatment outlined is brief, of necessity in a book which is aimed to cover so much ground.

The author has certainly presented the subject of therapy in the best manner for the teaching of students. Also the book is valuable for any practitioner of medicine. A general criticism would be that he has perhaps attempted too much for one volume. When he rewrites the book he will probably enlarge it to two volumes.

FUNCTIONAL DISORDERS OF THE HEART

Les Troubles Fonctionneles du Coeur. Semiologie et Therapeutique. Par R. Lutembacher. Paris: Masson et Cie, 1924. Pp. 520.

Dr. Lutembacher has written a book on diseases of the heart from the point of view of disordered function. The clinical manifestations of disease are discussed on the basis of the underlying pathological anatomy and physiology. Such a method of presentation is valuable to the student in training him in the proper method of approach to the patient and his disorder. The first section of the book is devoted to an adequate presentation of the salient anatomical and physiological characters of the heart, and the second to a discussion of methods of examination of the heart—both clinical and instrumental. The functional disorders of the heart are grouped into two classes—those following disease of the specific conducting system and those due to myocardial insufficiency. Insufficiency of the right and left ventricles are described separately and are sharply distinguished from one another. While this has a certain validity and value, the author has gone a little too far. Ordinarily, when the heart fails, it fails as a whole, though it is true the symptoms may be preponderatingly related to one of the ventricular chambers. The inclusion of heart pains associated with cardiac insufficiency in the concept of angina pectoris is unwise and will lead to confusion.

The volume is well written and printed and liberally and intelligently illustrated. The author shows a thorough knowledge of the literature and quotes many authorities, but unfortunately gives no bibliographic references. He exhibits another failing, which is particularly common among French writers, namely, frequent careless inaccuracy in the spelling of proper names—thus "Stokes-Adams" is spelled "Stockes-Adams," "Stocks-Adams," and "Stokes Adams" on different pages.

THE OCCLUSION TEST

The Relative Position of Rest of the Eyes and the Prolonged Occlusion Test. By F. W. Marlow, M.D., M.R.C.S., Eng., F.A.C.S., Professor of Ophthalmology in the College of Medicine, Syracuse University. Illustrated with Original Diagrams and Charts, Philadelphia: F. A. Davis Company, 1924. Pp. vii-96.

Dr. Marlow has for some years past advocated prolonged occlusion of one eye for the determination of the relative position of rest of the eye in the test of muscular imbalance. His plea for a more extensive employment of this method is based on the results of seven hundred cases extending over a period of some years. This prolonged occlusion of the eye, which may last up to two weeks, while not suitable in every imbalance case, often brings to light latent conditions which elude detection by other methods of examination: in fact there are cases that show no symptoms that can be referred to disorders of ocular balance in which prolonged occlusion brings them to light: "the general condition of health of the patient, including the reserve of nervous energy with which he was endowed at birth, has a large influence beyond any doubt in determining whether a given form or degree of muscle imbalance will give rise to symptoms or not." There are, besides, many cases of muscular imbalance in which correction of refraction will, instead of ameliorating the condition, aggravate the symptoms, and it is in these cases particularly that the condition of the eye muscles must be studied most thoroughly, and the relative or anatomical position of rest of the eye accurately determined.

EFFECT OF RADIUM AND X RAYS UPON LIVING CELLS

Radium, X Rays and the Living Cell, with Physical Introduction. By Hector A. Colwell, M.B. (Lond.), D.P.H. Second Edition. Revised. London: G. Bell and Sons, Ltd., 1924.

In this work, the authors have elaborated the experimental facts which have been established as to the effects of the x rays and the rays of radium upon the living cells. An elaborate amount of study and comparison of records has been made from the literature from the first introduction of these important methods.

In Part I, the transmission of both x rays and radium, and the ionization produced are fully considered, together with other radioactive substances and the general process of radioactivity. The disintegration of radioactivity and the radioactive emanations and the occurrence of radium in nature are well considered. In Part II, the chemical action on the forms of animal life, seeds, plants and bacteria are considered. The effects on the skin, blood, bloodvessels, spleen, thymus, thyroid, digestive tract, glands and the nervous system are each treated with compared results and the consideration of experimental studies that have been made by numerous authors with illustrations showing the relative effects. Then the consideration of the various complex studies of the body, including the eyes, muscle, cartilage, and connective tissues and the generative system are given the careful consideration of the authors and their numerous collaborators.

In the concluding chapters of the book, the authors have considered the effects upon malignant cells and shown the microscopic studies of sections in this connection. The production of malignant disease has also been given careful consideration. Idiosyncrasy and dosage and the physiological effects, and the selective and differential action of the rays, and the brief summaries of the facts and theories complete the work.

The preparation of this work shows an elaborate study of the literature since the beginning of the use of these measures. A bibliography follows each chapter which renders invaluable the work as a book of reference to the students of the x ray and radium.

The manufacture of the work is remarkably good and the illustrations are clear and invaluable in consideration of the subject. It is a reference book which physicians will value highly as showing the fullest consideration up to date, we believe, with advanced opinions of the subject.

THE TUBERCLE BACILLUS

Le Bacteria de la Tuberculosis. By Joaquin Ravetllat and R. Pla Y Armengol. Barcelona: Institutio Ravetllat-Pla, 1924. Pp. 75.

This interesting book has been issued by *Publicaciones del Instituto Ravetllat-Pla* in Barcelona and is the work of a distinguished veterinarian, Joaquin Ravetllat, and Dr. R. Pla y Armengol. It is written in correct Spanish, but fortunately for one who is not familiar with that language, there appears at the end a synopsis in English.

The authors have studied the tubercle bacillus in a unique manner which has led them to the conclusion that there exist three forms of the human type of this microorganism. They speak of a bacterium of attack, the intermediate bacterium or transition form, and the Koch bacillus or resistance form. The bacterium of attack the authors describe as a coccus which, "when it proceeds from cultures in liquid mediums presents itself isolated, in diplococcus, short chain or diploestreptococcus, tetradas and zooglea, the diplococcus predominating. In cultures in solid mediums it presents itself almost always in diplococcus or diploestreptococcus. It is slightly mobile. It colors well by means of all the basic analine dyes. It is not acid resisting. When it proceeds directly from the Koch bacillus it is gram positive; when it proceeds from the other attacking bacterium in series it is also gram positive." The manner of culture of this type of bacterium is then given. The virulence of this bacterium is considered variable from the highest most severe type to almost zero. The action of the microorganisms in the various internal organs

in the guineapig, rabbit and dog is given. "In all the animals, from the day following that of the injection (in whatever place it was made) the bacterium is found to be present in the blood . In the guineapig it does not disappear, and in the other animals it persists a long time in spite of their healthy aspect. The reinoculations determine often the formation of abscesses with pus similar to the caseum, and in the guineapig and rabbit in certain cases, the formation of tubercles."

In the intermediate bacterium, or transitory form, the authors include the germinative phase of the Koch bacillus in the cultures, the Much granules, and the intracellular corpuscles of the caseum and of some tuberculous serosities. The Koch bacillus the authors describe as the "bacillus of resisting form." In this chapter the authors give the usual characteristics and conclude with the following statement: "For us the Koch bacillus is a union of the attacking bacteria (coccus, granule, or nucleus) which, by the action of the organic defenses whether or not they pass through the intermediate form (another coccus or granule) dispose themselves in a short chain, and, besides modifying their interior constitution, cover themselves with a very protective wax capsule. If this is the case the intuition of Koch turns out to be admirable when he said 'each one of the isolated spores correspond to a fragment of bacillus so that on counting them one knows how many fragments enter into the composition of the bacillus, that is to say, how many isolated elements enter into its formation.' These elements would be, according to our view, attacking bacteria."

This work, which is illustrated by very good plates, must be of greatest interest to laboratory workers and if the conclusions at which Ravetllat and Armengol have arrived can be confirmed by other research workers, the work may prove of great clinical value.

CORRECT POSTURE

Individual Gymnastics. A Handbook of Corrective and Remedial Gymnastics. By Lillian Curtis Drew. Second edition, thoroughly revised. Illustrated with 109 engravings. Philadelphia and New York: Lea & Febiger, 1923. Pp. viii, 260.

This book is a useful one in its field, presenting many practical facts as to the training and correcting of the body in regard to its physical postures. It shows that this field is no small one either in the range of details to be considered or in those to whom it makes its appeal. These are special teachers of gymnastics who must be alert toward the individual problems which are constantly present. They are parents who in lamentable ignorance and habitual carelessness fail to observe errors of posture, of dress and other factors the results of which they deplore and which this book calls plainly to their attention. The writer sets forth these facts which show the need of physical training and the means by which this may be secured on the basis of her own practical experience in this work. Her writing is well illustrated with drawings which plainly emphasize the work to be done and reveal how it may be done. The subject is important and is made practicable by its presentation here.

It might, however, make too arbitrary an appeal if one did not remember that this matter of physical training is only one of the methods which must be conjoined with much else for a complete adaptation to the demands of life. Correct postures are an aid to this but at the same time they are a result, too, of an attitude toward life which admits of freedom and therefore of the most efficient action of the entire being, physical and mental. No wise teacher of gymnastics would deny this larger background, but such a view needs emphasis in a book which presents the physical side so well as is done here.

DELUSIONS OF GRANDEUR

The Memoirs of Li Hung Chang. By W. F. Mannix. With an introduction by Ralph D. Paine. New York: Houghton Mifflin Company, 1923.

In the introduction to the new edition of these controversial memoirs, Ralph D. Paine gives the history of the author. A man of brilliance, but lacking stability, he showed numerous neurotic traits, the least among which, perhaps, was the tendency to the drug habit. After a lifetime of shirking responsibility, hoaxing himself and everyone else, it is not to be wondered that in the seclusion of the Honolulu jail his disease finds at last a perfect outlet. He creates the life of a well known man. He sinks himself into that life as he creates it. Ergo—he *is* that well known man. Who better than he could write the memoirs?

The press clipping history of Chinese affairs is cleverly disguised. There is show of much meat and after all there is very little. It is the man, always the man, with his victories outweighing his defeats, around whom the story revolves.

Li Hung Chang's *alter ego* has a manner of expressing himself which will prove diagnostic to the medical reader. The physician finds constant wonders in the brain of man, no matter how diseased or unbalanced it may be. As a textbook of mental deterioration the memoirs are almost as valuable as for themselves. And twice as interesting!

ADVENTURES IN THE ARCTIC REGION

Wilfred Grenfell, the Master Mariner: A Life of Adventure on Sea and Ice. Illustrated. By Basil Mathews. New York: George H. Doran Company, 1924. Pp. 178.

This narrative of a life most unusual for a physician has been given color and vividness by the fact that the author visited Dr. Grenfell's boyhood school and heard told and read tales written by the noted expupil about his exploits for boys of later generations. In fact Mr. Mathew's book is evidently written for the information of young people as to the life and career of the missionary physician in Labrador, judging from his choice of material and his treatment of the subject. The story is in places carelessly told as to style, but it is always vivid and interesting. No new material of importance is added to that included in former biographies, for some of the most characteristic incidents only of the full life of Dr. Grenfell have been selected and briefly yet graphically related. The chief value of the book lies in its appealing presentation of the character and personality of the Labrador doctor in such a way that not only can youth fail to be interested in such a man and such a career, but people of any age who believe in a life of service to humanity.

Medicoliterary Notes.

The *Living Age* for October 11th contains two interesting contributions on the history of smoking and the tobacco habit. The first is an abstract of an article by John Fortescue in the London *Morning Post* tracing the history of the cigarette habit in Great Britain, from the introduction of the cigarette in 1877, until its complete popularization after the Egyptian campaign in 1882. The second article is called Pipes and Politics and is a translation from *L'Ere Nouvelle* of Paris. "Historicus," the writer, outlines most amusingly the role played in his conception in politics by the practice of smoking and snuff dipping, from the time when Nicot's plant from the Island of Tobago was first introduced into Europe, to a final salutation of the pipes of Herriot and MacDonald, "for they have won a standing undreamed of even during the bright dawn of liberty in 1830."

* * *

Louisiana's recent move to accept the provisions of the Federal Maternity and Infancy Act makes the total number of states now cooperating with the Government in this form of welfare work forty-one.

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The New School for Social Research of New York City has been giving to its students four courses in practical psychology. These are the Technic of Influencing Human Behavior, by Dr. Harry A. Overstreet, professor of philosophy at City College; Behavior Psychology, by Dr. John B. Watson; Introduction to Social Psychology, by Dr. Everett Dean Martin, director of the People's Institute of New York City; and Personality Development, by Dr. William I. Thomas, author of Social Origins and of many monographs and articles on social science.

* * *

Yellow is now considered the best color with which to decorate hospital walls and corridors, according to M. Paul Rea in a recent issue of the *Modern Hospital*. It supplies warmth to the eye and a certain sense of stimulation to the mind, and, properly toned, is of so unobstrusive a character that it is not easy for the patient to recall the color after leaving the hospital. When deepened to tan, it retains its pleasing character and at the same time shows soil and marring less, so is especially suited for the walls of diet kitchens, laundries, and other service and work rooms.

* * *

Some interesting chapter headings in Benedetto Croce's recently published *Conduct of Life* are Responsibility, Sex, Humility, the Joy of Evil, Heart, and Reason.

* * *

All good Englishmen are up on their ears over a recent move of the socalled Church of the Universal Bond. This is the official name of a group of modern Druids who have horrified the editorial pages of the London *Times* by securing permission to bury the ashes of their dead in Stonehenge.—*Living Age.*

* * *

Nightshade is the title of a recent novel which should be of unusual interest to the psychoanalyst. The work is anonymous and purports to be the story of a young lawyer in one of America's small towns, and of his reactions to the life of such a community. The style is simple yet vivid and the story is convincing.

* * *

The Atlantic Monthly Press has announced that the letters of William James have recently been translated into French, with a preface by Henri Bergson. Another work in English to be put into a new French edition is the Late Joseph Conrad's *Nigger of the Narcissus*. Robert Humière, who translated many of Kipling's books, is the translator.

* * *

George Sand was an inveterate smoker and collector of pipes. She once said, "He who does not smoke is not a whole man."

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There are four present day writers who have performed the difficult and unusual feat of winning their literary spurs in an acquired language. They are Joseph Conrad (alas! no longer with us), W. L. George, Edwin Bjorkman, and Gunnar Gunnarsson. Conrad, a Pole, after years as a sailor before the mast, mastered the English language and became, perhaps, the greatest stylist of the present age. W. L. George was born in France and lived there until he reached man's estate. He did not succeed in leaving the French language behind when he crossed the Channel. His conversation is still gluttonous with it, not to mention his writings. Edwin Bjorkman was born and brought up in Stockholm, Sweden, but has been a citizen of the United States for over thirty years. On coming to this country he knew little more than schoolboy English and yet his first published story in English appeared in the *Atlantic Monthly*. The last of the quartet, Gunnar Gunnarsson, although he writes in Danish, was born and brought up in Iceland.—*Literary Review.*

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The October issue of the *Survey Graphic* contains a review of the Leopold-Loeb trial written by George W. Kirchwey, former warden of Sing Sing Prison.

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The production in Spain of Luigi Pirandellois *Six Characters in Search of an Author,* which had a successful run in New York theatres in 1923, is reported to have stirred up a tremendous press battle in that country which persisted for several months. While the fight was on, every Spanish press writer was lined up, either pro or con.

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McNaught's Monthly for September contains an article by Dr. Joseph Collins, author of *The Doctor Looks at Literature* and other works, on *Our Moral Imbeciles,* which takes as a text the Franks murder trial.

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Tobacco dealers report that for several years the "snuff curve" has been rising rapidly on the charts made by statisticians for the trade, so that it looks as though snuff dipping is again about to become popular. Some attribute this increase to the general increase in use of tobacco of all kinds. Others lay it to the younger generation of today, ever in search of new thrills. Now it is seldom taken nasally, but, the dealers say, placed on the tip of the tongue or rubbed just back of the teeth. To sneeze is very bad form. Only the very young and inexperienced are guilty of such a *faux pas.*

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A social survey of the town of Ipswich, England, which has a population of 80,000 people, indicates that the waterworks supply 8,250 gallons of water a year per capita to its citizens, but there are church accommodations for only one person out of three. Despite the housing shortage, the people are better lodged in respect to both roominess and the quality of tenements than a century or more ago. The number of individuals per dwelling has declined since 1801 from five to four and four tenths.—*Living Age.*

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The University of Missouri, in cooperation with the U. S. Bureau of Mines, is offering a fellowship in industrial hygiene, which is open to graduates who have a B.S. degree in public health or the equivalent or a B.A. degree in arts and sciences or the equivalent and an M.D., and have the proper training in biochemistry, pathology, and physics, and who have the qualifications for research work. The work will be conducted in the Department of Hygiene of the university's School of Mines and Metallurgy.

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Two bulletins of unusual interest to industrial hygienists are Numbers 355 and 359 of the Bureau of Labor Statistics of the U. S. Department of Labor, reporting the proceedings respectively of the International Association of Public Employment Services, held at Toronto, September, 1923, and of the International Association of Industrial Accident Boards and Commissions, held at St. Paul during the same month. Another recent noteworthy government publication is *Public Health Bulletin* No. 139, reporting the transactions of the annual conference of the State and Territorial Health Officers with the U. S. Public Health Service, held at Washington in May, 1923.

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Louder Please! The Autobiography of a Deaf Man, is the arresting title of a rather unusual autobiography. Earnest Elmo Calkins is the author, and he tells the story entertainingly, with humor, and with occasional pathos of his rise from a pessimist to an optimist, and, incidentally, to a high position in the advertising world.

Abstracts from Current Literature

ENDOCRINOLOGY

Familial Dysthyroidism.—G. Etienne and G. Richard (*Revue Française d'Endocrinologie,* February, 1924) report a case of severe Basedow's disease in transformable vagotonic form. There was a thyroid family history attached to eight of the nine individuals in three generations, the ninth person being a syphilitic grandfather. When the patient, a girl twenty years of age, came under observation she was in an advanced cardioneurotic condition, with pronounced exophthalmos. Large doses of thyroid extract administered over a period of several months brought her to an approximately normal condition. About three years later she lapsed into a state of evident myxedema, which was again relieved by pushing the thyroid treatment.

Effects of Testicular Grafts in Senile Organisms.—C. J. Parhon and M. Kahane (*Revue Française d'Endocrinologie,* February, 1914) observed transient socalled rejuvenation in a man of seventy-eight and in a dog sixteen years old following the implantation of testicles from young and vigorous subjects. The authors discuss the relation of the various endocrine glands to old age, and close by proposing for further study the following three questions: 1. In what measure the symptomatic picture of old age is due to disturbance of the endocrine functions; 2, Whether old age can be experimentally produced by means of endocrine intervention, and 3, to what extent experimental or natural old age can be remedied by organotherapeutic treatment, grafts, or other intervention of the glandular system.

Testicular Grafts.—Kenneth M. Walker (*Lancet,* February 16, 1924) used fragments of ectopic testicles, obtained from young donors between the ages of ten and twenty-two showing well developed sex characters, for implantation into the tunica vaginalis in cases of testicular deficiency. Tuberculosis, malaria and all other constitutional disorders must be excluded in the donors. In a number of cases metabolic investigations showed a marked increase in oxygen consumption to the square metre of surface after the implantation and a greater capacity for work. While the results appear very promising, this operation has its limitations aside from the difficulty of obtaining the grafts. In few of the cases is the deficiency confined to the testicle and many show other endocrine deficiencies. All heterografts, no matter how complete their vascularization, undergo absorption, but the patient does not necessarily show the same degree of deficiency as before the operation. It may be possible to improve considerably a boy showing signs of eunuchoidism during puberty, even though the transplant may subsequently be absorbed.

Steinach's Rejuvenation Operations. — Kenneth M. Walker and J. A. Lumsden Cook (*Lancet,* February 2, 1924) conclude that at the present time there is insufficient material on which to base a decision as to the value of vasoligature as a means of treatment in man. The results of the operation appear to have been capricious, although numerous cases are reported in which benefits accrued. As, however, the data on which the claims of improvement rest are inexact and incapable of measurement, a large number of observations will be necessary before it will be possible to bring in a final verdict as to the precise value of this form of treatment. However, whatever the verdict concerning this clinical problem may be the results obtained by Steinach in his animal experiment are certainly of the greatest biological interest.

The Behavior of the Testis in Transplantation.—Carl R. Moore (*Endocrinology,* July, 1924), experimenting in the Hull Zoological Laboratory at the University of Chicago, discovered that testicular grafts uniformly failed under any other conditions, but persisted and continued to function, if implanted within the tunica vaginalis. Absence of function in cryptorchidism and similar conditions he believes due to pressure, whether from retention in an obstructed canal or otherwise. The interstitial tissue under such circumstances is not overdeveloped and not different from that of the normal testis, but the germinal cells fail to differentiate completely. Even in the guineapig, rat, rabbit, and other animals, which throughout life retain a wide open connection between the scrotum and the peritoneal cavity, the germinal cells are degenerate so long as the testis remains in the peritoneal cavity. The scrotum seems therefore to exert a striking influence on the testis. Removed from the scrotum, a testis is rapidly deprived of its germinal epithelium. The socalled Steinach operation the author ascertained to cause no degeneration, provided the testes retain their normal scrotal relationship, and therefore not to be the cause of the rejuvenation attributed to it. His experiments further tend to show that it is the higher temperature of the peritoneal cavity which causes degeneration of the germinal cells in retained testicles. He asserts that the scrotum of mammals is to be considered a local thermoregulator for the testes and that the regulatory or functional capacities are indispensable for the production of differentiated germ cells or the maintenance of those already produced.

A Quantitative Study of the Human Hypophysis Cerebri or Pituitary Body.—A. T. Rasmussen (*Endocrinology,* July, 1924) made accurate weight measurements of several parts of the normal gland in fifty adult males and found the average somewhat smaller than other authors have done. The pars anterior represents about seventy-two per cent. of the total organ, pars nervosa eighteen per cent., pars intermedia two per cent., capsule eight per cent. Three additional cases having typical symptoms of postadolescent hypopituitarism were well within normal limits as to weight of the whole organ and of its various parts.

Heteroactivity of the Pituitary Gland with Hyperthyroidism.—C. M. Wilhelmj (*Endocrinology,* July, 1924) records a very complete history and examination of a case and discusses the differential diagnosis and etiology. He regards it as an instance where the patient suffered from hyperfunction of the anterior pituitary lobe before puberty, the condition changing at that time to hyposecretion of the posterior lobe with a moderate degree of hyperthyroidism. Oral administration of large doses of whole pituitary extract with injection of pituitrin gradually afforded relief, but the medication required to be continued permanently.

Glaucoma and Other Eye Conditions Due to Endocrine Disturbances.—J. Imre (*Klinische Wochenschrift,* July 15, 1924) regards his experiments as pointing directly to a connection between glaucoma and endocrine function, generally of more than one gland. Hertel has shown that the hypertension of glaucoma in association with hypothyroidism is reduced by thyroid treatment. Ovarian hypofunction occurred in four cases of keratoconus, and hypothyroidism in one case, all of them being benefited by glandular medication.

Endocrine Therapy.—A. E. Gow (*British Medical Journal,* April 19, 1924) maintains that most of the endocrine preparations now in use have no therapeutic value when given by mouth. As a rule, tissue extracts for intravenous use show approximately the same effect as foreign proteins, and with few exceptions, show no specific action. With the exception of thyroid and parathyroid gland, no other extract is absorbed as such from the digestive tract. Epinephrine has been found valuable in shock, asthma and other spasmodic conditions such as cardiospasm, urticaria and angioneurotic edema. Pituitary extract is useful as a stimulant to a failing myocardium, especially in toxic myocarditis and in the third stage of labor. The author is particularly opposed to shot gun prescriptions of endocrine glands in the hope that one of them will hit the mark.

Relationships of Myxedema to Immunity.—G. Marinesco (*Bulletin de l'Académie de médicine,* May 27, 1924) dissents from Conland's view that reduced thyroid activity necessarily implies greater resistance to tuberculous infection, and refers to Garibaldi's conclusion that thyroid insufficiency may cause either an increase or a decrease, or have no effect on, the resistance to infections according to the experimental conditions, the results from thyroidectomy in this respect varying with the dose, toxicity and physical state of the septic products injected, the duration of the inoculations and the time elapsing between thyroidectomy and inoculation; large amounts of highly toxic or virulent and very diffusible septic products, vis., toxins, seem to be the cause of the lowered resistance of thyroidectomized animals. The author reports two cases of con-

genital myxedema illustrating the low degree of resistance of such patients to infections in general. The first was a myxedematous idiot thirteen years old, who contracted erysipelas twice and later measles, the latter followed by irregular fever continuing for nearly seven months, until the child's death, with pulmonary tuberculosis, diarrhea, loss of weight, prostration and somnolence. In the earlier infections, fever had never been high, doubtless owing to the absence of the thyroid—demonstrated at the autopsy—this gland playing an important role in the acceleration of oxidation and in rises of temperature. The cells of the cerebral cortex were found of subnormal size and the cortex thinned. The nerve cells elsewhere, including those of the spinal cord, showed a similar deficiency. Association fibres showed poor development. The tuberculous foci showed an unusually dense pullulation of the tubercle bacilli. The islets of Langerhans and pancreatic cells, the adrenals, and the renal glomeruli and convoluted tubules were all reduced in size. The same applied to the striped muscle cells, though interspersed with the latter were a few fibres having two or three times the diameter of normal muscle fibres. Within the sarcolemma was an abnormal mass staining with hematoxylin and thionin. The other case of congenital myxedema died at the age of thirty-six years from epidemic influenza with intestinal disturbances. The thyroid was absent, being replaced by two small colloid cysts, and the liver, pancreas, kidneys, ovaries and even the pituitary and brain contained streptococci—a finding ascribed to lowered resistance to infection. The influence of the thyroid in the defence against infections is probably not a direct one, as it is not the thyroid that secretes antibodies but an indirect one relating to impaired body nutrition and development, since the thyroid governs the metabolism of the organs which manufacture the substances antagonizing infections.

Splenic Endocrinism and Pancreatic Exocrinism.—M. R. Castex, of Buenos Aires (*Revue Française d'Endocrinologie,* April, 1924) relates two cases which he says incontestably prove the existence of a splenopancreatic interglandular correlation, splenic endocrinism taking part in pancreatic exocrinism. In one of the patients, examination of whose feces showed intense creatorrhea resulting from insufficiency of the tryptic secretion of the pancreas, he twice obtained a disappearance of the creatorrhea, or in other words a normalizing of the tryptic secretion, by means of splenic organotherapy, while this tryptic insufficiency reappeared on discontinuing the splenic extract. In his opinion these two clinical observations, both of them in cases of exocrine pancreatic insufficiency of especial severity as regards the secretion of trypsin, both of them on subjects having considerable splenomegaly from a similar etiology of paludism, syphilis, and alcoholism, both of them uniformly responsive to splenic organotherapy in the matter of the tryptic insufficiency, demonstrate a participation of a decisive nature on the part of the spleen in the exocrine function of the pancreas.

Adrenal Virilism Complicated by Diabetes Insipidus.—A. Chauffard (*Revue Française d'Endocrinologie,* February, 1924) describes the case of a woman of forty whose menstruation had ceased three months earlier without possibility of pregnancy. At the same time hair appeared all over her body. A scanty black beard of half an inch or more covered her face, its hairs forming a thin, tangled network; black tufts filled the axillæ and a veritable forest of black hair covered all the pubic region. The limbs, thighs, abdomen, back, arms and forearms presented a thick mat of black hairs. Her face was congested, its aspect decidedly masculine although her voice was unchanged; her mental activity was diminished by a sort of cerebral hebetude. A swelling in her right side was diagnosed as a benign adrenal tumor and was subjected to ten applications of deep radiotherapy. An immediate local improvement was produced, the tumor diminished by half, her strength being regained, and psychic activity returning. But her face remained congested and the hypertrichosis unmodified. After a few days she was attacked by intense thirst, marked polyuria, and the other symptoms of diabetes insipidus. This improved under pituitary extract, but the patient died shortly afterward of pulmonary congestion. The initial malady was the genitoadrenal syndrome of Gallais, and the endocrine condition was a pluriglandular one. an ovarian involvement being shown by suppression of menstruation and a pituitary by diabetes.

Importance of the Internal Secretions in Various Forms of Cataract. — Adler (*Klinische Wochenschrift,* July 22, 1924) discusses the etiology of different forms of cataract. That of Basedow's disease he ascribes to the pressure of the enlarged gland on the parathyroids. Glassblower's cataract has a somewhat similar origin. The heat or the excess light from the glowing mass leads to the presence of methylguanidin and other toxic substances in the blood, instead of being fixed by the parathyroids. The resulting latent tetany is manifested in cataract. Two and a half years after raying of a mammary carcinoma with the röntgen ray the author witnessed clouding of the lens. Chvostek's sign and Trousseau's were absent, but the electrical response was increased, especially in the median and ulnar nerves. Careful examination, he says, will often detect evidence of latent tetany in those having cataracts, and senile cataract may frequently be ascribed to lesions of the parathyroid bodies.

Postoperative Myxedema.—E. Bonilla and C. Blanco Soler (*Endocrinology,* March, 1924) report a case of this condition. The patient was first seen after the removal by operation of the right lobule of the thyroid, the isthmus, and all the left lobule except the posterior border. His symptoms were frequent and sometimes severe diarrhea, nervous dyspnea, tachycardia, tremor of the hands and tongue, exophthalmos, cephalalgia, insomnia, light melanoderma, buccal pigmentation, asthenia, sexual frigidity, and intense melancholy with fear of being alone and tendency to suicide. Intensive thyroid treatment, six half grain tablets daily, was begun and produced great improvement in a month's time. On reduced doses he progressed steadily to complete cure, the exophthalmos and the psychic disturbances having absolutely disappeared. The authors conclude that, except in cases of compression, cardiac alterations, or other disorders in which social conditions act as impediments, hyperthyroidism ought always to be treated medically. Partial extirpation of the gland scarcely ever cures. In this patient exophthalmos persisted after thyroidectomy and resection of the sympathetic and he was completely cured by thyroid treatment.

Mitochondria Content of the Thyroid as an Index of the Activity of the Gland.—William Bolt (*Journal of Laboratory and Clinical Medicine,* June, 1924) used a method practically identical with the Cowdry modification of the Altman-Bensley stain for the study of mitochondria. In exophthalmic goitre in operative cases the mitochondria were found to be largely and uniformly increased, the cytoplasm being infiltrated by a dense mass of small red granules, except in one instance, where they were much less numerous. The adenomata also showed a marked increase in mitochondria, but not uniformly so, as in the exophthalmic cases, the increase being more marked in some areas so as to give the section a mottled appearance. In colloid goitres with toxic symptoms the examination for mitochondria may reveal changes otherwise undetected, for although in most of the cases there was some hyperplasia, in all the cases examined the mitochondria were markedly and generally increased. The findings in these cases correspond with the results obtained by Goetsch.

Individual Constitution and Endocrine Glands.—Julius Bauer of Vienna University argues (*Endocrinology,* May, 1924, 8:297) from the investigations of Morgan in the field of heredity that the chromosomes, probably twelve in number, represent the totality of transmissible qualities, which are localized in some way in these little bodies. During the evolution of the whole organism from a single fertilized ovum a part of every one of these chromosomes enters every new body cell. The specific structure of the chromosomes is responsible for the characterization of the species, race, family, sex, and a great many of the individual peculiarities potentially determined and fixed at the moment of fertilization. The units for body length manifest themselves in the cells of epiphyseal cartilages, the units for a long nose in the cells forming later the constituents of the nose, the units for musical talents in certain brain cells, and the units for red hair in the cells producing the hair pigment.

In correlation with this chromosomal potency stands also hormonal potency, as interpreted by the author, intensifying or checking the action of the former. Secondary sex characteristics, for instance, are associated with the primary, not only through the hormonal influence of the glands, but

through chromosomal correlation. Every cell of the organism obtains its definite sex peculiarity from the moment of fertilization of the ovum, and a certain chromosomal structure is responsible for the sex in every one of the body cells. Of course a sexual difference will not be manifest in the cells of the liver or of the lungs, but it will be quite obvious in the cells that produce the hair, those that form the breasts, and so forth.

In the same way the interference of chromosomal and endocrine effects is to be considered in the problem of fat deposition, of evolution and of senile involution of the organism, and in many other problems. Everywhere we meet with the endocrine organs as a sort of multiplier and condenser of certain chromosomal potencies. Not everything which is attributed today to pure endocrine disturbance is in reality of endocrine origin. The interference of general chromosomal, that is of constitutional, and of incretory influences must be taken into consideration in a great number of cases where up to date unsatisfying hypothetical suppositions of pure hormonal disturbance have been suggested.

Recklinghausen's Disease.—P. G. Castellino (*Folia Medica,* No. 11, 1924) describes the case of a man of sixty having more than four thousand fibrous tumors invading practically every structure of his body, many of them of considerable size. He quotes Révillod, Chauffard, Branca, Breton, Suzuki, Vignolo-Lutati, Preiser, Bosquet, and Muto as reporting cases accompanied by endocrine pathology, disclosed at autopsy, mostly adrenal or including adrenal degeneration. Taking these reports into account, together with the success of organotherapy in other cases, he says, Muto, Pende, Castellino, Lyon, and others think Recklinghausen's disease should be considered a disturbance of several endocrine glands manifesting itself through the sympathetic system by the formation of fibrous tumors. Muto says it "originates from some constitutional or acquired factor, such as tuberculosis, infection, or trauma, which leads to an alteration in the body metabolism, and creating the conditions necessary for the development of embryonal cells in the skin and nerves."

Relation of the Thymus to the Venous Trunks at the Base of the Brain.—M. Lucien and J. Guibal (*Revue Française d'Endocrinologie,* April, 1924) state that in exceptional instances examination of fetuses and of infants expiring at birth showed that the left innominate vein passes in front of, instead of behind the thymus gland. In such instances compression of the vein between the thymus gland and the sternum from flexion of the head during birth or from other cause may well produce such an asphyxia and general venous stasis as to account for death. Such a compression produces among its effects an engorgement of the veins in the thymus gland itself, and this stasis progressively increases the size of the gland and the compression of the vessels at the base of the neck, thus constituting a vicious circle of vascular engorgement.

CARDIOVASCULAR DISORDERS

Arteriosclerosis. — William Russell (*British Medical Journal,* May 17, 1924) maintains that the raising of aortic pressure results from constriction of the arterial wall and consequent diminution of the content of blood in the constricted arteries. The true blood pressure is determined by the response of the left heart to the increased aortic pressure and the left heart may become embarrassed and commence to fail, so that the arteries may be constricted without elevation of the blood pressure. The arterial constriction is attributed to the composition of the blood—and acidosis. Frequently the application of the doctrine of acidosis is effective in some of the clinical manifestations of arterial hypertonia, both when the arteries are sclerosed and when they are normal. Whatever the precise nature of the blood impurity, it is more than a vasoconstrictor, for it leads to obliterative endarteritis in the kidneys and to capillary occlusion.

Angina Pectoris and the Possibilities of Its Surgical Relief.—K. F. Wenckebach (*British Medical Journal,* May 10, 1924) subscribes to the theory of Allbutt and favors the treatment of angina pectoris by resection of the depressor nerve. However, it is doubtful whether this operation will ever be the operation of choice because of the difficult and sometimes impossibility of finding this nerve. On theoretical grounds it is the safest form of procedure because only afferent nerves are removed and the essential augmentory nerves are left intact. It has been shown that the depressor nerve, when the aortic wall is stretched as a result of high blood pressure, results in a rapid fall of the blood pressure, thereby relieving the stress on the aortic wall.

Syphilis in Angina Pectoris.—L. Gallavardin (*Presse médicale,* July 16, 1924) presents a statistical study on 450 cases of angina pectoris, comprising only cases in which the pain was felt on exertion. The series as a whole showed twenty-one per cent. of cases of known syphilis and nine per cent. of cases of doubtful syphilis. Subdivision of the cases into certain groupings showed that among cases of angina pectoris attended with aortic lesions a syphilitic history is extremely common. In angina on exertion combined with aortic insufficiency, syphilis—known or doubtful—is almost the rule (eighty-eight per cent.), and in cases combined with aortic aneurysm is constantly present. In angina without an aortic lesion, the frequency of syphilis drops to about twenty per cent. The younger the patient, the greater the frequency of syphilis—forty-four per cent. below forty years, as against 17 per cent. above fifty years. In angina superimposed on dyspnea on exertion in cases of high blood pressure, the frequency of syphilis drops to fourteen per cent. Thus the consideration of angina on exertion as uniformly an indication of syphilis is unjustified.

Syphilitic Aortitis.—H. B. Haskell (*Northwest Medicine,* August, 1924) asks what may be expected from treatment in this disease and gives the following answer: 1. In simple aortitis an arrest of the process and prevention of aortic incompetence and aneurysm. 2. In cases of suffering from paroxysmal dyspnea and anginalike pain, we may expect relief from the attacks in a certain number of the cases over a varying period of time. 3. In aortic insufficiency and aneurysm we cannot expect very much. We cannot hope to undo the damage already done, but it is our duty to treat the syphilis in the hope that we may arrest further progress of the disease.

Tinnitus Aurium Associated with Abnormalities of Blood Pressure.—H. Mortimer Wharry (*Lancet,* May 3, 1924) draws the following conclusions from his series of cases: 1. That cases of severe tinnitus aurium with abnormal blood pressure form a large and important group in which much distress can be relieved. 2. That severe tinnitus aurium may be due to a high blood pressure alone or to a low blood pressure alone, in which case it is usually found to be bilateral. 3. That it may be due to an aural lesion combined with a high blood pressure, or with a low blood pressure, in which case the tinnitus is on the side of the lesion. 4. That in the circumstances just mentioned the tinnitus may be cured or improved by removing the aural lesion alone, or by reducing the blood pressure to approximately normal, or by doing both. 5. That trinitrin is of great value as a therapeutic agent in the cases associated with a high blood pressure, as it appears to have a specific effect in relieving the tinnitus.

Blood Pressure and Sugar Metabolism.—In studying fifty nondiabetic patients with hypertension J. Koopman (*Endocrinology,* May, 1924) found hyperglycemia to be only an exceptional occurrence, as were increase of uric acid in the blood and alimentary glycosuria. From estimation of blood pressure in 161 cases of diabetes it was seen that in young diabetics blood pressure was normal, while in older patients hypertension was the rule. No relation was found between complications and blood pressure, excepting Bright's disease and arteriosclerosis. Acidosis does not cause a diminished blood pressure.

Capillary Pulsation, with Special Reference to Nasodilatation in Aortic Regurgitation. — Thomas Lewis (*British Medical Journal,* April 26, 1924) summarizes his findings as follows:

1. When human skin is soaked in water at temperatures of 45° to 47° C., the capillaries and venules on the one hand, and the arterioles on the other, independently dilate. These are both local reactions. When higher temperatures are used, a reflex dilatation of the arterioles is observed in addition, and this spreads beyond the heated area.

2. Capillary pulsation is a physiological phenomenon, occurring in the skin or mucous membrane whenever the arterioles are sufficiently dilated, providing that the pulse pressure is normal and capillary and venule tone is not increased. A sufficient dilatation to produce pulsation is

usual in the arterioles of the face of young people at room temperatures. Pulsation occurs in the water providing the arterioles are capable of dilating; it is usual in association with the vasodilatation of local inflammatory lesions; it occurs in the facial flush of amyl nitrite, and in the other forms of bright erythemas of the skin.

3. If, in the presence of normal or heightened pulse pressures, capillary pulsation in the hand is not produced by this water test at the end of three minutes, the arterioles are probably incapable of dilating.

4. In aortic regurgitation, capillary pulsation is often independent of high pulse pressure, although the latter increases the pulsation. In patients with valvular defect, sufficient dilatation of the arterioles is again the chief determining cause of capillary pulsation. The state of the arterioles not only chiefly determines its presence or absence, but *a fortiori* it determines its varying prominence in different skin areas.

5. The color of the facial skin in uncomplicated aortic regurgitation is not pale, as usually stated, but, if anything, more flushed and warm than normal. The skin of the hands is affected like the face, but in a lesser degree.

6. Arteriolar dilatation is opposed to cyanosis.

7. It is more accurate to associate capillary pulsation with dilated arterioles than it is to associate it exclusively with any other causative factor; and this statement is independent of the clinical diagnosis of the case.

8. It is probable that in all cases of macroscopic capillary pulsation the phenomenon is due to the pulse passing from the arteries into and through the capillaries, to involve in greater or lesser degree the minute skin venules. The visible pulsation is shown to be due mainly to pulsation of the venules, at all events in the skin of the face, trunk, and upper parts of the limbs. Pulsation of the capillaries themselves contributes more in the skin of the palm and sole and in the mucous membrane of the lip.

9. There is no evidence that pulsation is conveyed from arterioles to venules through the arteriovenule anastomoses.

Relation of Blood Pressure to the Amount of Renal Tissue.—Hilding C. Anderson (*Journal of Experimental Medicine,* May, 1924) used rabbits in which the amount of kidney tissue was reduced by operation or destroyed by the production of infarcts, in order to determine the effect on the blood pressure of a marked reduction of renal tissue. The amount of kidney parenchyma removed or destroyed was roughly seventy per cent. This did not cause hypertension, even when prolonged renal insufficiency resulted. By inference, then, the atrophy of renal tissue in chronic glomerulonephritis is not the cause of the accompanying hypertension.

Electrocardiogram in Prognosis. — C. F. Moffatt (*Medical Clinics of North America,* May, 1924) finds that significant T-wave negativity is not always associated with manifest clinical evidence of serious cardiac disease, and it is just in such cases that the electrocardiogram is of considerable aid. He has gained the distinct impression that this abnormal feature of the electrocardiogram is more apt to occur in conditions of progressive vascular degeneration involving in general the whole arterial tree, and in particular the coronary circulation, associated sometimes with symptoms of angina pectoris and very frequently found in cardiovascular disease with hypertension. He therefore believes that in the type of patient showing evidence of degenerative arterial changes, usually at first with hypertension, with symptoms of myocardial insufficiency, with or without anginal attacks, and frequently classified as myocarditis, the electrocardiogram may be of the greatest assistance in arriving at a more exact diagnosis and prognosis.

Can Variations in Ventricular Systole Be Determined from Electrocardiogram Deflections?—Elizabeth Bartos and Juius Burstein (*Journal of Laboratory and Clinical Medicine,* January, 1924) found in comparing electrical and mechanical systoles in different animals and men that the electrical systole (Q to end of T) is longer than mechanical systole by a variable and undeterminable interval. In dogs this involves at least an error of ten to twenty per cent., while in man the error was only three to five per cent. These differences are not due to variations in the QRS interval, but are due to inherent variations in the S-T interval. A comparison of the changes in electrical and mechanical systoles during altered conditions of the circulation showed that usually, but by no means always, the two changed in the same direction, but only rarely to equal degree. This was shown to be true when the heart was either slowed or accelerated, when the arterial resistance increased, and when venous return augmented. It is therefore concluded that waves of the electrocardiogram can be used as an index of ventricular systole only when no great degree of accuracy is required.

RHEUMATISM

Malaria and Articular Rheumatism.—Ladislaus Lichtenstein (*Wiener klinische Wochenschrift,* March 27, 1924) believes that malaria may be complicated by a febrile polyarthritis during its febrile stage, and also that this acute articular rheumatism may appear also in the second to the sixth week of the convalescence from the malaria. This articular involvement affects only the large joints in an otherwise uncharacteristic course and it is not markedly influenced either by quinine or by salicylates, but only by intensive thermal therapy. It is most likely that this polyarthritis is also due to malarial toxins.

Chronic Arthritis in the Adult, Associated with Splenomegaly and Leucopenia. A Report of Five Cases of an Unusual Clinical Syndrome.—A. R. Felty (*Bulletin of the Johns Hopkins Hospital,* January, 1924) describes five cases of chronic arthritis occurring in individuals of middle age, all of whom gave a history of marked loss of weight. In contrast to the prolonged course of the disease, and the ubiquitous distribution of the pain which is the presenting symptom of all the cases, the objective findings, by physical examination and x ray study, do not indicate a very damaging or destructive process. In every case the spleen was palpably enlarged, and in all but one there was a slight secondary anemia. There was a more striking leucopenia which was a distinctive feature of the disease. The leucocyte counts varied from one thousand to four thousand. In three of the five cases the lymph nodes were definitely enlarged. The author suggests that this syndrome is a distinct clinical entity, of which the outstanding symptoms are those related to the joints and the outstanding signs are the enlarged spleen and the blood picture.

Nature and Etiology of Rheumatic Fever.—Llewellyn J. Llewellyn (*American Medicine,* November, 1923) arrives at the fololwing conclusions: 1. There is a rheumatic diathesis, an innate predisposition to certain manifestations under favorable conditions. 2. Its hereditary transference is secured by the transmission of protein sensitization. 3. An ill balanced or vitamine deficient diet, through the structural changes induced thereby in the heart and alimentary mucosa, favors the occurrence of sensitization and accounts for the predilection evinced by the rheumatic virus for the heart, especially in children and adolescents. 4. The arthritic, cardiac and other phenomena of rheumatic fever are the outcome of anaphylaxis, working through the medium of vascular endothelial poisoning. 5. This same vascular endothelial poisoning, with its associated circulatory stases might possibly account for the phenomena of chorea. 6. The responsible antigens may be of bacterial, animal or vegetable origin. 7. The exciting causes in children are often alimentary disturbances, socalled bilious attacks; in adults most commonly muscular overexertion and exposure to cold. 8. These same exert their effect through acidosis and acidemia, which in older subjects may be of myogenous origin.

The Pathogenesis of Rheumatic Fever.—Homer F. Swift (*Journal of Experimental Medicine,* April, 1924), in a discussion of rheumatic fever, describes the histopathology of the cardiac and joint lesions, and of the subcutaneous nodules. He states that it is evident that there are two distinct types of response on the part of the body to the infectious agent of rheumatic fever, that is, proliferative and exudative. The perivascular proliferative type of lesion, resembling an infectious granuloma, explains the subacute and chronic character of the clinical symptoms in many patients with the disease. The acute arthritis occurring with high fever and general intoxication is accompanied by marked exudation of serum into the periarticular tissues and of serum and cells into the joint cavities. These acute exudations disappear following the administration of certain drugs, but this does not mean necessarily that all lesions of the proliferative type have resolved. In fact, the last mentioned lesions, when present in the subcutaneous tissues, often continue for months, and from analogy it is concluded that they have a similar persistent character in other tissues invaded by the causative agent of rheumatic fever.

MEDICAL JOURNAL AND RECORD

A National Review of Medicine and Surgery

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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, DECEMBER 3, 1924

Medicolegal Notes.

EXPERT TESTIMONY AS TO CAUSE OF DISEASED CONDITION

Action for damage was brought for the pinching out of a part of the flesh of the first joint of the plaintiff's right thumb by the negligent lowering of a crane. This received treatment and appeared to heal. Soon after this injury a boil appeared above the plaintiff's right wrist. Subsequently it was discovered that just below the elbow an infection had set in which later involved the upper part of the ulna and necessitated a removal of the upper two-thirds of it. The principal question was whether the boil or the injury to the thumb was the cause of the infection of the ulna. The plaintiff contended that the thumb injury caused the bone infection and this caused the appearance of the boil. The defendant insisted that the boil was not caused by the injury, but itself caused the bone infection. There was expert evidence offered in support of each of these theories. The trial court permitted expert witnesses for plaintiff to testify, over objection, and in answer to questions hypothesizing the facts, that the injury to the thumb caused the infection and disease of the bone.

The Missouri Supreme Court, O'Leary v. Scullin Steel Co., 260 S. W., 55, holds that the admission of this evidence was proper, and that the rule formerly favored by the decisions of the Missouri courts, under which the admission of such evidence would have been held error, as an assumption by expert witnesses of the province of the jury, should no longer be followed. In the course of exhaustive discussion of the rule and the prior decisions, the court said: "With respect to the question in this case there is no reason to exclude the expert's opinion as to the cause of the bone infection. No layman could tell from the evidence (other than that of the experts), whether the thumb injury or the boil caused that infection. The only evidence which, to the lay mind in the jury box could be said to have any efficacy, to point to one rather than the other as the cause of the infection, is that of experts. In this situation our law steps in, and by the rule of the preceding paragraph directly forbids the expert to say more than that the wound or the boil, or both, 'might or could' cause the infection of the bone. The jury is then in this situation: It has before it no evidence on which it can form an independent opinion as to the cause; it has expert testimony that the injury to the thumb 'might or could' cause the bone infection; it has before it other expert testimony that many other things might or could cause it; it has no testimony that either the wound or boil, or anything else, did cause it. . . . In the instant case the jury cannot, without expert testimony, get at the cause from the other evidence, because the evidence has no tendency to prove to the lay mind a relation of cause and effect. It could not logically find the cause from the expert testimony if the rule in question is applied to restrict expert opinion to what might or could result from the injury, since that does not necessarily go further than a possibility, and a mere possibility does not satisfy the burden of proof."

AUTHORITY OF EMPLOYER'S SUPERINTENDENT TO SEND INJURED EMPLOYEE TO HOSPITAL IN EMERGENCY

In an action by the owners of a hospital against a construction company engaged in building bridges, for the treatment of an employee who was sent to the hospital by the defendant's superintendent, on the advice of the local doctor, suffering from fracture of the spine, crushed vertebrae and paralysis of both legs, injuries sustained while in defendant's employment, the North Carolina Supreme Court held, Miller v. Cornell-Young Co., 187 N. C. 549, 122 S. E. 383, that the superintendent who had entire charge of the construction work and had authority to buy materials and repair the broken machinery and employ and discharge the workmen, had implied authority to authorize the plaintiffs to care for and administer to the fatally wounded employee. It was an emergency case and a continuing one. Judgment for plaintiffs was therefore affirmed.

EMPLOYMENT OF PHYSICIAN BY INJURED EMPLOYEE

Under the Oklahoma Workmen's Compensation Act the employer has the right to name the physician to render medical treatment to an injured employee, but may waive this right. When the employer does so, and knows that the employee is going out of the community for treatment and makes no objection thereto, the employer likewise waives proof that the bills are reasonable for the same class of treatment in the location where the injury occurred.

Where the employer furnishes a physician for first aid treatment, and in the presence of the employer such physician advises the injured employee to go elsewhere for treatment, and the employer consents thereto and advises that it is the thing to do, and reports to the Industrial Commission that the injured employee has been sent to a hospital for treatment, it is held that the Commission is authorized to excuse the employee from making formal request upon the employer for treatment, and may likewise excuse the employee from making proof that the bills paid and to be paid are reasonable, and such as would have been charged a patient in the same station in life as the employee and in the community where the injury occurred.—Scruggs Bros. v. State Industrial Commission (Okla.), 221 Pac. 470.

IN ACTION ON QUANTUM MERUIT FOR SERVICES DEFENDANT HAS BURDEN OF PROOF OF DEFENSE OF SPECIAL CONTRACT

In an action by a physician on quantum meruit for the value of services rendered to the defendant's wife there was no dispute as to the fact that the service was rendered to the wife in childbirth or that it was entirely satisfactory. The defendant's contention was that he and the physician made a special contract covering the service, by which the physician was to be paid $35, plus mileage, $3.50. The jury rendered a verdict for $38.50, and the plaintiff appealed. The sole question was as to the burden of proof.

The South Carolina Supreme Court held, Pittman v. Le Master, 121 S. E. 677, that when the plaintiff sues upon a quantum meruit and proves the services and their value, he makes out a prima facie case upon the reasonable theory that an implied contract has been established to compensate him for their reasonable value. If the defendant relies upon a restrictive express contract fixing the amount of compensation, he must set it up as an affirmative defense, the burden of establishing which is on him.

In the present case it was held that the trial court correctly charged the law as to this, but nullified it by also charging that if the evidence was evenly balanced the plaintiff must lose; and judgment for defendant was reversed and a new trial ordered.

MUNICIPALITY MAY REGULATE PASTEURIZATION OF MILK

The North Carolina Supreme Court holds, State v. Edwards, 121 S. E. 444, that a city in the exercise of its police power may require milk for human consumption to be pasteurized, and may prescribe reasonable regulations under which the pasteurization shall be done. A municipal ordinance requiring pasteurization of milk and requiring those selling it to procure a yearly license, under penalty for violation, is held to be reasonable and valid.

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Miscellany.

Race Progress.—Until comparatively recent times the alleviation and cure of disease were the sole objects of the medical practitioner, whereas today his ultimate aim is its prevention. Since the advent of the National Insurance Act it has become manifest that however efficient it may be for treatment, the scheme makes no provision for preventivé medicine, and the success, or otherwise, of the forthcoming Royal Commission will be gauged by its power of devising some practicable method of providing the means of discovering and countering the beginnings of disease in the adult population. Ill or well, at regular intervals, each individual should not only be offered, but induced to accept, a medical examination free of cost, on the lines suggested by the late Dr. Lauriston Shaw, and adopted by certain life insurance companies. The school medical officer has facilities for obtaining a consultant's opinion and institutional treatment for those children who require them. In the course of his duties he examines periodically, whether ill or well, different age groups, and has before him the personal and family history and the record of previous examinations. He is thus able to note the effect of time and growth upon the conditions described in the report, and in many instances to compare the condition of those cases which have undergone treatment with others of the same nature where treatment has been refused. His opportunities of detecting the beginnings of disease, and of urging upon parents the importance of regular attendance at hospital or clinic are exceptional. The only thing lacking is the power to make sure that the children shall receive such treatment as is deemed by competent authority to be necessary for their own wellbeing, and through them for the progress of the race.—(*Medical Press,* October 15, 1924.)

The Smoke Nuisance.—Every large city and many smaller manufacturing communities suffer from excessive smoke. Anything which obscures sunlight and contaminates the air may affect health, says an editorial writer in the *Boston Medical and Surgical Journal,* October 30, 1924. Smoke is also a financial burden because it necessitates more time and expense in keeping clothing and dwellings clean and represents fuel waste.

Large cities are paying especial attention to the problem of diminishing the amount of smoke. With characteristic energy Chicago has made a definite campaign against the smoke nuisance through transfer of the enforcement of the smoke ordinance to the Department of Health. The known violations of the ordinance in this city amounted to 1,468 cases in 1918, reaching the figures of 8,284 in 1920. In 1918, sixty-eight chimneys out of every hundred observed were violating the ordinance, but in 1924 only twenty per cent. were at fault.

Including fuel waste, as well as direct damage, it has been estimated that smoke has caused a loss of $42,500,000 a year in Chicago, and the irritation of the air passages is supposed to favor the development of respiratory diseases and may have a definite effect in increasing susceptibility to tuberculosis.

Chicago's example has led to the estimate that there are probably 16,000,000 amateurs managing fuel consuming plants in the United States with a great financial loss. This means that even the small consumer of fuel may do his part toward lessening the smoke nuisance as well as saving money. He should be ambitious to aid in health maintenance as well as to practise economy.

Monthly Reports on Vaccinations and Revaccinations Required by Public Health Law.—The attention of physicians is again called to section 311 of the Public Health Law which requires that every health officer shall report to the State Department of Health at the end of each month the number of primary vaccinations and the number of revaccinations performed in his community during the month.

For each of these types of vaccination the attending physician should supply the health officer with the number of cases in his practice having vaccinia or primary reaction, the number showing vaccinoid or accelerated reaction, the number of those showing immune or immediate reaction, the number of failures and the number of reactions unobserved or unrecorded.—*Health News,* October 27, 1924.

Industrial Accidents to Working Minors.—According to a study just completed by the Children's Bureau of the U. S. Department of Labor, 7,478 industrial accidents to young workers under twenty-one years of age occurred in one year in three States. Thirty-eight of these accidents resulted in death and 920 in partial disablement for life. Wisconsin, Massachusetts and New Jersey were the states included in the study. The cases of industrial accidents to minors were secured from the files of State Industrial Commissions and Accident Boards and were only those in which compensation had been paid: that is, in Wisconsin, accidents causing disability of more than seven days' duration; in Massachusetts and New Jersey, accidents causing disability of more than ten days' duration.

The smallest number of accidents and the lowest accident rate occured in the case of children under sixteen. Each of the States studied had attempted to protect children under this age by prohibiting them from employment in certain occupations, chiefly in the operation of the more dangerous machinery, which is the source of greatest accident hazard to the young worker. Children of sixteen and seventeen were prohibited from some employments in Massachusetts and Wisconsin, but in all three states were permitted to operate many of the dangerous machines.

Accident figures reflected this difference in legal protection. Power working machinery caused a larger percentage of the accidents to workers sixteen and seventeen years old than to children under sixteen—protected by law—or to young workers between eighteen and twenty-one, who were better able to protect themselves. Accidents were also more serious to the sixteenth and seventeenth year group than to either the younger or older workers. Of the injuries to workers under sixteen, 10.7 per cent. resulted in death or partial disablement for life. For those sixteen and seventeen years old who were injured, the rate was 13.4 per cent. killed or permanently disabled; for the group eighteen to twenty-one years the rate was 12.7 per cent.

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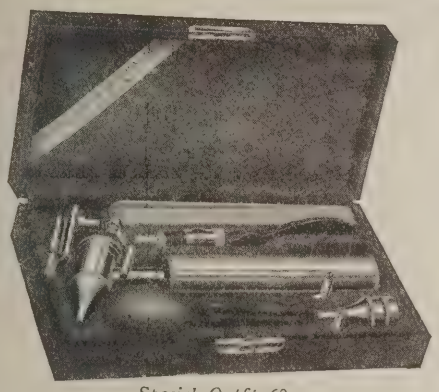

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Adapting Nutrition Work to a Community.—The New York Association for Improving the Condition of the Poor has issued a report prepared by Miss Lucy H. Gillett, superintendent of its Nutrition Bureau, describing the methods employed, and summarizing the results of, an intensive campaign against malnutrition which the A. I. C. P. has been carrying on in the Mulberry district of New York City.

The report states that of 2,181 apparently well children examined in the medical clinics at the Mulberry Health Centre, 656, or thirty per cent., were diagnosed as malnourished. Since much of the sickness and lowered vitality in later life is the result of poor nutrition, as physicians have frequently stated, the importance of providing educational guidance in nutrition as well as providing attention for the correction of physical defects is of tremendous importance.

If these children were in danger from fire or industrial accidents, the report states, every safety device and preventive measure known would be urged to protect them. Although the results from malnutrition are much slower, often much more indirect and much less dramatic than those from fire or accidents, they are even more deplorable because of the larger number affected and the lingering misery resulting.

Many a wage earner is unable to increase his income to the safety level because of health conditions due to poor nutrition. Too many children who apparently show no signs of disease or malnutrition are allowed to drift into the wage earning period with only a part of their rightful earning capacity developed. Thus handicapped there is danger that they may add to the responsibility of the health and social agencies.

Miss Gillett's report states that before any method for combatting malnutrition can be decided upon, it is first necessary to determine, 1, what nutrition work is being done and what other nutrition work should be done in the district; 2, what is the prevailing nationality, and what is their social and educational background; 3, are preventive or curative aspects of nutrition to be emphasized, or both; 4, shall the work be conducted in the interest of the preschool child, the school child, the adult, or for everyone in the community; and 5, what method shall be used.

The problem may be approached through small groups, through intensive work in individual families, or through general educational work with large groups, or a combination of any two or all three. The small group may be used with school children or intelligent mothers or preschool children. It is useful in either a curative or preventive program. There are arguments for and against nutrition work exclusively in groups.

The following arguments for the group method are advanced: 1. One small group frequently arouses the interest of a whole neighborhood by providing a graphic illustration. 2. A large number may be reached in a short time. 3. The class spirit often gives a child courage to venture on new habits. 4. Because cooperation is frequently secured more quickly, the class sometimes reduces the number of home visits required.

Arguments against the group method are: 1. Home conditions cannot be as completely corrected —the work is not as thorough. 2. The class spirit which prompts some good habit formation is removed when the class is over and children are apt to return to old habits. 3. Too many children are living under conditions which they are powerless to correct and about which the parents are indifferent. 4. In such cases home visits are necessary. Home visits in addition to the class period and preparation for it often take more time than home visits alone. 5. The preschool child himself can be taught comparatively little in groups. The intensive work in the home could often be done in the time it takes to get mothers to come to class. 6. Each worker has to decide for herself whether her conditions are favorable for group work. 7. Intensive work is always a necessary part of the curative program in cases where individual problems exist or where the cooperation of the parents is difficult to obtain. 8. General educational work may be used most effectively as a preventive measure, though doubtless much malnutrition may be cured thereby too.

During the four and one half years of intensive work covered in the A. I. C. P.'s report, intensive care was given to 1,018 malnutrition cases and in addition the habits of all the boys and girls in the families of these special malnutrition cases were influenced. With an average of 3.8 children to a family, 2,578 children received attention. There is much evidence that the work spreads to other families in the neighborhood, but such results are hard to estimate. We frequently hear of mothers who give milk and cereals to their children because children under our care were advised to use these foods.

Group work would naturally seem more economical of time than intensive home visits, but it was extremely difficult to get these women (who were mostly Italians) out at stated intervals and much time was lost thereby. The average cost per visit in a home has been estimated to be thirty-seven cents. The average cost per person per lesson where the women were taught in groups was estimated to be thirty-six cents, with an average attendance of eight per lesson. With practically the same cost per individual and with more satisfactory results from intensive work, in this particular neighborhood the malnourished preschool child was handled more economically through intensive work than in groups. School children can doubtless be handled more economically in large numbers.

Diarrheal Outbreak Results from Polluted Spring.—Under date of October 9, 1924, Dr. Sears, district state health officer, reported an explosive outbreak of diarrhea which occurred in Onondaga Valley, New York. The outbreak involved seventy-eight of the eighty-nine members of the twenty-three families living on a certain street in Onondaga Valley, all of whom received their drinking water from a private spring. The spring is believed to have been polluted through the increased rate of seepage through the soil due to a heavy rainfall which occurred two days previous to the outbreak. The cases were characterized by vomiting, diarrhea and intestinal cramps, and in a few cases by some fever.—(*Health News*, October 27, 1924.)

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Junior Red Cross Dental Work in the Philippines.—Those of us who overeat may dig our graves with our teeth, but that is not a sufficient excuse for us to neglect them. Indeed, we are beginning to realize that though a good set of teeth is not necessarily synonymous with good health and longevity, bad teeth may bring disease and materially shorten life. In the near future it may be considered an even greater crime to have neglected teeth than to present a dirty face to the world, and the Junior Red Cross in the Philippines is assuredly doing much to promote this much to be desired attitude.

The children of the Philippine Islands have made themselves financially responsible for a scheme as sound as it is comprehensive. Every centavo of their membership fund is spent in the provinces on dental work—salaries for dentists, the maintenance of dental clinics, and the purchase of dental material, etc. The direction of the Junior Red Cross Work in the Philippines from June 1, 1922, to January 1, 1924, was in the hands of Miss Anna B. Cowles who found awaiting her an enrolment of 99,000 children in the schools. By May 31, 1924, there was, thanks to the hearty cooperation of school officials and others, an enrolment of 700,141 children whose contributions went to the support of sixty-five dental clinics and other activities. These clinics serve all children in those public and private schools which are enrolled as Junior Red Cross Auxiliaries, regardless of whether the individual child has contributed to the Service Fund or not. Only in extreme emergencies and when the services of no private dentist can be obtained, is treatment of adults allowed. Here is an imposing table giving a summary of the work from June 1923 to May 31, 1924.

No. of dental clinics established	65
No. of children inspected	274,940
No. of children with defects	188,407
No. of treatments	163,081
No. of extractions	137,413
No. of fillings	120,913
No. of corrections	70,249
No. of cleanings	184,054

Tooth brush drill is taught and tooth brushes are given to the children too poor to buy them. A total of 62,356 tooth brushes was provided in the year reviewed. The activities of the Junior Red Cross in the Philippines are not limited to dental hygiene, but this is evidently its specialty and one of which it may be very justly proud.—(*The World's Health*, October, 1924.)

Fewer Births Attended by Midwives.—During 1924, to date, 411 midwives' licenses have been issued by this department. Of this number 15 were new licenses and 369 were renewals. During 1916 licensed midwifes in this State exclusive of New York City reported sixteen per cent. of all the births. There has been a gradual falling off in the percentages of births reported by midwives, until in 1923 out of a total upstate registration of 101,729 births, midwives reported 9,447 or 9.3 per cent. Even in the cities where there is a large foreign population there appears to be a reduction in the number of births midwives are attending. There is also marked improvement noted in the type of women doing the work; the undesirable element is being eliminated.—(*Health News*, October 27, 1924.)

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

THE MODERN GOLFER. By Cyril J. H. Tolley. New York: Alfred A. Knopf, 1924. Pp. 213.

THE HOUSE OF PROPHECY. By Gilbert Cannan. New York: Thomas Seltzer, 1924. Pp. 311.

WOODSMOKE. By Francis Brett Young. New York: E. P. Dutton and Company, 1924. Pp. 334.

THE HOUSE WITH THE GREEN SHUTTERS. By George Douglas. New York: Thomas Seltzer, 1924. Pp. 314.

ORGANOTHERAPY IN GENERAL PRACTICE. By G. W. Carnrick Company. New York, 1924. Pp. 253.

LES TROUBLES FONCTIONNELS DU COEUR. Par R. Lutembacher. Paris: Masson et Cie, 1924. Pp. 520.

THE DEFEAT IN VICTORY. By George D. Herron. Boston: Christopher Publishing House, 1924. Pp. 202.

THE BOY IN THE BUSH. By D. H. Lawrence and M. L. Skinner. New York: Thomas Seltzer, 1924. Pp. 388.

CHARLES BOUCHARD, Son Oeuvre e Son Temps (1837-1915). Un Médecin Philosophe. Par Paul Le Gendre. Paris: Masson et Cie, 1924. Pp. 525.

BASAL METABOLISM IN HEALTH AND DISEASE. By Eugene F. DuBois, M.D. Illustrated with 79 Engravings. Philadelphia and New York: Lea and Febiger, 1924. Pp. 372.

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Medical Journal and Record

A National Review of Medicine and Surgery, Established 1843

VOL. CXX, No. 12 NEW YORK, WEDNESDAY, DECEMBER 17, 1924 WHOLE No. 2295

The Common Cold*

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I offer no apology for presenting a paper upon a subject so simple and of such clinical frequency that not only the profession but the laity feel themselves adequately qualified to cope with it, for it is the observation of all physicians that if colds could be eliminated in the same manner as yellow fever, malaria and diphtheria, a large proportion of ills to which flesh is heir would be relegated to oblivion.

Colds may be classified in the following manner: First, stomachic or digestive; second, vasomotor; third, infective; fourth, exanthematous.

I shall consider only the first three, as the exanthematous belong particularly to the realm of the pediatrists.

STOMACHIC OR DIGESTIVE

Etiology.—In these cases there is ordinarily an acidosis or a tendency thereto. The individual is habituated to the frequent use of soda bicarbonate, bisodol, milk of magnesia or other antacids, ignorant of the fact that all of these may induce an excess of hydrochloric acid in the stomach and increase rather than diminish acidity. Lithemia, gout, rheumatism and like conditions frequently underlie this type. They occur mostly in summer and autumn when the subject partakes freely of the fruits and vegetables then available, such as berries, tomatoes, melons, grapes, apples, cider and other acid fruits.

Symptoms.—The most frequent location of the initial discomfort is the nasopharynx. It is ushered in by an itching, burning sensation in the nose and nasopharynx followed by a sense of puffiness and inability to breathe. There is frequent sneezing due to pressure in the upper third of the nose, but is unassociated with the profuse nasal discharge characteristic of the infective cold. Headache and lacrimation are also less evident. These colds are variable in duration, proportionate to the response to treatment. There is no pathological change worthy of note.

Treatment.—Foods which have apparently been at fault should be eliminated. There are many known instances where strawberries are practically a poison. There is a distinguished member of our profession living in New York City, who is so susceptible to strawberries that it takes only three to make his nose shut up entirely, throw him into a high fever and cause a rash to appear over his entire body.

Antigout, antirrheumatic and antacid medication is of value after the elimination of the food elements, to be followed by daily doses of sal hepatica for a week or more. Exercise, sweats, free use of water, and corrective diet are prophylactic measures to be insisted upon. High colonic irrigations in cases of intestinal stasis and putrefaction, followed by implantations of the bacillus acidophilus has lessened this type of cold in many of my patients. The change of the intestinal flora by any means is beneficial.

VASOMOTOR

Etiology.—Here we have the most complicated and the most unsatisfactory type with which to contend.

The neurotic, and those on the borderline, whom we may class as high strung, not only in women, in whom it predominates, but in men living under high tension, as stock brokers, gamblers, professional men, and those upon the stage, as actors, actresses or singers, are all subject to this type of colds. To these may be added boys and girls at the time of puberty, and women at the time of the menopause. That there is a definite relation between the erectile tissue in the nose, and the functioning sexual organs in both women and men, is beyond question. Hence in girls at the beginning of menstruation, and boys when the voice is changing, the nasal mucous membrane is congested, the breathing is impaired, headaches are frequent, mental acumen is lessened, energy is reduced, and the optimism of youth is lowered. The colds, socalled, of puberty, are known to all, and the specialist who endeavors at this time to give the sufferer more room for breathing by operative intervention is violating all the laws of nature, and will subject the patient to the probability of a dry scabby nose during subsequent years of life. Bearing upon this physiological phenomena, it may not be inappropriate to call attention to the fact that an abused physiological function may ultimately become a pathological entity. During sexual excitement, the mucosa becomes turgescent, and in the erotic or in those frequently addicted to sexual indulgence, this becomes permanently engorged. Fibrous elements will ultimately replace the elastic fibres which enable

*Read before the Colorado Congress of Ophthalmology and Otolaryngology at Denver, Colorado, August 2, 1924.

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the membrane to swell at one time and retract at another. This frequent engorgement finally becomes a permanent hyperplasia and the individual complains of constant nasal stoppage, inability to breathe, and the loss of the sense of smell. They are constantly blowing the nose without satisfactory results, sleep with their mouths open, awaken with a dry throat, and complain of the discomforts characteristic of a chronic cold.

Treatment.—To overcome this type of cold, it is necessary that the subject should change his environment, alter his method of living, and modify his indulgences, which is almost an impossible task to ask of the specialist. In those with hyperplastic mucosæ, operative measures are often satisfactory. Patients who live under high tension, eat unwisely, take no exercise, sleep irregularly, live in close offices, etc., can benefit by modifying these conditions, but in my experience, permanent relief has been most difficult to procure.

INFECTIVE COLDS

Etiology.—1. Predisposing. Puberty, menopause and reduced vitality from old age or other causes, are the three most potent predisposing conditions to infections in the nose. Next in order are irregularities of the septum underlying dyscrasias such as lithemia and acidosis; vocations, as in miners, coal heavers, chemists, manicurists, office workers, laboratory workers, teachers and other indoor workers. The farmer, soldier, carpenter, hod carrier and other outside worker is peculiarly free from colds.

Neither extremes of cold nor heat play a definite part in catching cold. Soldiers submitted to exposure, explorers experiencing every extreme of cold and heat, ranchmen sleeping in the open without cover, are all phenomenally free from infective colds. Stefansson, the Arctic explorer, has stated that when he and his men passed beyond the habitat of civilization, colds, bronchitis and pneumonia were unknown. Large bodies of troops in campaigning, even when submitted to all the inclemencies of weather and without adequate protection, will carry on for long periods of time free from epidemic colds.

2. Active. Although there may be found, upon microscopical examination, nearly every form of bacteria in the secretions from the normal nose, yet a predominance of one or more type will often characterize an infective cold. In large cities, particularly, the nasal mucosa is not only the constant host of the Bacillus catarrhalis, but also of various forms of the staphylococcus, the streptococcus, the pneumonia bacillus, the influenza bacillus and even in rare instances of the colon bacillus and the gonococcus.

Why, then, in the presence of this variety of organism does the individual not always present the evidences of a cold? For the simple reason that resistance plays the part that invariably determines the status between health and sickness. Granting the almost universal presence in the nose of these microorganisms, what is it that enables them at one time to produce the symptoms of a cold and at another remain inert?

First, there is some shock to the sympathetic nervous system, due either to digestive disturbances, lowered bodily resistance from exposure to draught, overindulgence is alcohol, excessive mental or physical fatigue, or prolonged existence in a vitiated atmosphere, and as a result of these there follows a lowered surface tension of the mucous membrane. A biochemical change occurs, permitting the ever present microorganism to gain entrance to the submucosa, paralyze the phagocytic action and minimize other elements existing there for its protection. The surface tension, which is one of balance, is undermined, and the streptococcus or its allied bacteria penetrates beyond the surface and produces all the discomforts and symptoms of an infectious cold.

Sometimes the toxin produced by the invasion of the microorganism is met by an antitoxin which ameliorates if it does not destroy the potentiality of the invading germ, but most frequently the resistance of the individual is such that the organism and its toxins overcome the protection offered by the antitoxins and the gradations of an infective cold follow.

PATHOLOGY

There are three stages of pathological change in an infective cold: First, prodromal or dry; second, exudative or wet; third, mucopurulent.

PRODROMAL OR DRY STAGE

The first condition represents the immediate invasion of the organism and nature's endeavor to repulse it. It is one of inflammation as presented anywhere and is manifested by swelling, hyperemia and discomfort. The mucosa is turgescent and dry. The arterial supply is increased, the venous drain is retarded owing to the pressure from expansion, the muscle around the racemose glands supplying mucus is contracted, the gland itself not being able to discharge its content is distended and for a period, varying from a few hours to even a day, the surface mucosa is red and dry.

EXUDATIVE OR WET STAGE

The second period begins with an abundance of elimination from the mucous glands, as the muscle surrounding its exit has become paralyzed and upon relaxation the surcharge of mucus held back pushes forth unrestrained. The veins begin also to function but inadequately and extravasation of serum through the meshes of areolar tissue takes place and adds to the mucus from the racemose glands and we have the watery stage of the cold. The elastic fibres of the mucosa have partially regained their function and squeeze the membrane so that further elimination of foreign matter takes place. After a variable period of one to several days the cold enters the third period or the

MUCOPURULENT STAGE

We now have the terminal pathological condition where nature is exercising every effort not only to eliminate the infective organisms, but to throw off the products of inflammation produced by their presence.

The discharge is one of mucus, serum, lymphocytes and accumulated detritus incident to this disorganization of the normal function of the mucosa. Wherever and whenever inflammation occurs there follows a replacement of the normal tissue by a certain amount of fibrous tissue and in proportion to the

frequency thereof, just so far are the functioning properties replaced by nonfunctioning scar tissue. When carried, in the nose, to its ultimate end, there will obtain a hyperplastic or hypertrophic rhinitis.

SYMPTOMS

Both subjective and objective symptoms occur coincident with the pathological changes of the three stages. To enumerate them all would be tedious and to the disregard of the skilled clinical observations of those present.

The first period, the prodromal or dry, is the most uncomfortable for the patient. There is burning and itching in the nasopharynx, nose and eyes; sneezing, headache, chilly sensations and possibly fever. This period is temporary and only occasionally the specialist sees the mucosa in this condition of marked inflammation. There soon follows the second stage of profuse watery nasal discharge, lacrimation, fullness in the ears, loss of resonance, loss of smell, cold sores, etc., so familiar to all. During this stage, the Eustachian tubes and accessory sinuses frequently become involved owing to either infection by continuity or forcible entrance of air laden with the infective secretions. After a few days, if the cold is not aborted, the discharge becomes thick, tenacious, stringy, sometimes blood stained, and the effort to dislodge it from the mucous membrane is often attended by dire results. The quantity of discharge blown from the nose is, in a number of instances, too great to be produced by the outflow from the mucosa alone, and I believe that the sinuses are unquestionably involved in these cases. The terminal stage often extends into days or weeks, in accordance with the ability of the individual to throw off infection, and also proportionate to the success of the doctor in combating the disease. Cooperation on the part of the patient is very important, for disregard of instructions and infrequent treatment prolong the date of recovery.

TREATMENT

Prophylactic.—Correction of septal deformities, reduction of hypertrophies, combating acidosis, regulating diet, ventilating sleeping quarters, instituting systematic outdoor exercise, eliminating flannel underwear except in the old and very young, and substituting therefor linen mesh or similar material, insisting upon cold sponging, cold showers or cold plunges in the morning according to the resistance and reaction of the individual; advising the patient predisposed to colds to avoid crowds, not to use subways, not to attend horse shows nor the circus, particularly at the season of the year when colds are prevalent. Admonish the parents to isolate the member of the family having a cold, and to employ gauze upon which to blow the nose, which can be burned, rather than a handkerchief. A handkerchief when frequently used and withdrawn in the presence of others, wafts an infected breeze to whomsoever is near. It likewise is handled by the servant collecting the laundry, to whom the cold may be distributed, again handled by the laundress, both of whom become additional foci for the spread of the infection. Until we all recognize the advisability of such prophylaxis and insist upon its execution, colds will continue to become epidemic.

Direct.—Here again the three pathological steps must be considered as the basis for treatment. In the prodromal or dry stage, an effort must be made to hasten and abet nature's method to eliminate the organism of invasion and its toxins. To apply locally any medication that will tighten surface tension, as adrenalin and cocaine, or to administer internally any drug that will dry the surface, such as belladonna, is to disregard the functional economy of the mucosa and retard nature's methods of recovery. The old time practice of administering quinine, belladonna, etc., is contraindicated.

Just as the general practitioner endeavors to abate fever by calling upon the skin, kidneys, bowels and lungs to eradicate the poisons producing the fever, just so should the specialist endeavor to make not only all of these functions cooperate, but also make the mucous membrane "sweat." Some of the simpler methods of former practitioners seem to promote this outcome more than later therapy. If possible, get the patient to bed. In the prodromal stage, give to an adult ten grains of Dover's powder on retiring, a hot lemonade with whiskey, rum or brandy in it, a hot mustard foot bath, and cover up with blankets until a good sweat is induced. The next morning, a large dose of sal hepatica, or citrate of magnesia is administered to counteract the effect of the opium. Should the second or watery stage have appeared by the next day, have the patient remain in bed and have him drink large quantities of cream of tartar water, or give frequent doses of liq. ammon. acetatis, or frequent small doses of aconite.

In the first stage, I never treat the condition by local application, except by steam inhalations with the head covered up and for this I employ a mixture of:

Tincture Benzoin } āā dr. 1
Ol. Pini. Pumil. }
Menthol M. x.
Milk of Magnesia qs. ad. oz. iv
Sig: Dr. 1 to pint boiling water inhaled at hour intervals from a benzoinol inhaler.

When the second or watery stage begins I irrigate the nose from the nasopharynx forward, by means of a postnasal syringe, using equal parts of Dobell's solution and hot water, followed by either five per cent. argyrol solution in warm water or collene, one part to two parts of hot water. After this, I let the patient inject into the nose a small quantity of a nose cream, which I have employed for years, consisting of: carbolic acid, menthol, camphor and liquid oleostearate of zinc.

This cream is soothing, slightly antiseptic and conveniently put up in tubes for use by the patient. For a variable time, according to symptoms, I carry out this routine daily or even twice a day, if the patient agrees with the argument that a cold that is overcome within a day or so is of inestimable economic value, not only in enabling him to accomplish more mentally and physically, but by preventing a large number of possible sequelæ.

The advocacy and employment on the part of the patient of nasal sprays, douches, salt water irrigations, etc., are not only ineffective, but dangerous to the patient. The infective organisms collected in the entrance to the nostril on the vibrissæ and likewise distributed along the curvatures of the nasal

fossæ are forced backward toward the Eustachian tubes and are distributed to regions previously uninvolved. I also deprecate the employment of nasal sprays in any case of cold, as the pressure now at command from the Sorensen pump is too freely employed, and often creates trauma, and drives the infective material from the front of the nose backwards towards the Eustachian tubes.

When the cold has reached the third or mucopurulent stage, some of the proprietary remedies, such as coryza tablets, rhinitis tablets, and similar preparations, may give some relief, but even here local treatment is far more effective. In this stage, I apply on the same pledget of cotton, a one in sixteen thousand solution of adrenalin in rose water or camphor water, and a one per cent. solution of cocaine, lining out the pledget along the curvature of the swollen turbinates. After leaving in situ for about two minutes, I remove it, and if sufficient shrinkage has taken place I irrigate the nose from one side to the other with the head bent well forward and the patient's body flexed so that a large volume of the solution is permitted to run, without force, from one side out the other, without endangering the Eustachian tubes or sinuses. Unless this method is carried out without employing force and unless the patient is instructed to open and breathe through the mouth rather than the nose, untoward results may obtain.

This douching with a large quantity of fluid brings away all or nearly all of the thick ropy secretion and frees the membrane for the application of the medication to follow. I employ a Douglass douche and an alkaline powder called alkanos, which simulates glycothymoline in appearance and acceptability, but is cheaper and in a more easily handled form. There is no particular value in alkanos, and either seiler, mucol, or even salt water made from sea salt is equally effective. Salt, however, is very drying and leaves a smarting sensation if used too strong.

After cleansing the nostrils with one or more douches, on each side, I put in pledgets of cotton soaked in equal parts of collene and water, and if the patients will permit, leave them there until they return home or to their work, if either is not too far distant. I believe that our results from local treatment are often failures because we leave the medicaments in situ insufficiently long to obtain their full benefit. In particularly tenacious discharges, I often give drop doses of potassium iodide four times a day to increase the watery and lessen the thick discharge. The local application of Mandle's solution of iodine will also accomplish the same purpose.

The value of argyrol in low percentage is questionable, but if used in twenty to thirty per cent. and left in the nose for half an hour, it is unmistakably of value even in sinusitis. In catarrhal sinusitis incident to colds, I also employ interrupted suction, and frequently use my sinus suction syringe, which when a vacuum is created and then released, the medication in the syringe can be forced into the sinus from which the secretions have been sucked.

To stop treatment in any stage before complete extermination of the infective organism has been accomplished, is to invite a recurrence of all symptoms due to a reinfection from a new invigoration of germs, or a new colonization from those uninfluenced by the antiseptics employed.

VACCINES

Autogenous vaccines have in my hands been no more effective than the socalled stock vaccines. In some instances, I have seen marvelous results follow the employment of vaccines, while in others I have not been able to note any benefit. This applies to both autogenous and stock vaccines. I have a few patients who have for years had autogenous vaccines in the autumn, and from their statement their colds have been reduced to a minimum. As vaccines do no apparent harm, I can see no reason why they should not be employed, even though in the experience of a number using them, little or no definite results can be noted. I have not employed the chlorine treatment, but anticipate some good results from its employment.

Though presenting to you a perfect primer of facts, relative to a subject as old as medicine itself, I nevertheless hope that its rambling nature may induce comment more accurate and more pertinent to the subject, and which will be of profit to us all.

44 West Forty-ninth Street.

Induced Increase in White Blood Cells—Its Effects on Infection

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The difficulty in doing anything worth while in the treatment of furunculosis is particularly impressive to one doing industrial medical work. The local measures of incision, drainage and dressings furnish treatment only for the result, not for the cause of the infection. All too often in the use of autogenous vaccine, there is a cessation of the infection only, during the repeated injections. In many cases when the vaccine is not given the boils reappear.

In every case of well established furunculosis a culture of the blood of the infected individual will show colonies of the staphylococci and streptococci.

Knowing the immediate and marked effect of salicylate of mercury in the treatment of syphilis, I made an effort in 1916 to apply the same measure in an obstinate case of furunculosis, in the belief that if the mercury was so potent in decreasing the number of the treponemas, there was a reasonable chance that the same result would be obtained in the case of furunculosis. An injection of one grain of the

salicylate of mercury deep in the gluteal muscle was given in the case mentioned. The discharge of pus from the lesions was at once increased, the contents were quickly evacuated, and the furunculosis was completely healed very soon thereafter.

In eighteen other cases of well established furunculosis during the following winter and spring the patients were given the same treatment. All recovered after from one to three injections and up to May, 1917, there had been no recurrence of the infection in any one of this series of cases.

In army camps in America and in France; in the service of the American Red Cross in Siberia and Albania, and in this district of England, Southampton, this treatment of furunculosis has been satisfactory in the quick relief given the patient in the cessation of the infection.

At times the salicylate was given for ulcers of the leg, for lacerated and surgical wounds in which the healing powers seemed to be delayed, for acne vulgaris, and carbuncle, and only one absolute failure was seen, that of a case of acne vulgaris.

In October, 1923, a case of a pyogenic infection of the lymphatics was seen. This patient for four years had had repeated abscesses of the glands. In September, 1923, he was given an anesthetic and a large abscess in the axilla was opened and drained. The wounds did not heal, the sinuses continued to drain. When seen by me five weeks after the operation salicylate of mercury was given, and in twenty-four hours the sinuses were healed, and the Wassermann negative. Then for the first time it was realized that some process, far more potent than any poisonous effect of mercury, was being made active.

At once a visit was made to the municipal laboratory of Southampton. Dr. Simson the pathologist in charge was interested but sceptical. After a day or two's discussion a count was made of the writer's blood—9,000 white cells to the c.mm. were found. Salicylate of mercury was given and in twenty-four hours another count was done and 19,800 white cells were found. During the next six weeks the same control had eight other injections of mercury, with counts before and after each, and it was found that the increase was progressively less after each injection, so that after the ninth grain there was an increase of only one thousand to the c.mm. This would seem to explain the age old knowledge in the treatment of syphillis, that mercury must be given in series, with rests between each, so allowing the body to reestablish a sensitiveness to the mercury, for the stimulation of the production of more white cells.

Wishing to confirm this first count, another control was taken to the laboratory. This man was the subject of recurrent attacks of asthma, was pale and underweight. His first count was 17,000 to the c.mm. Nothing was found in his history or the examination to account for the condition of his blood, save the occasional attacks of asthma. One grain of the salicylate was given him solely for the purpose of the count on the following day. This count showed 23,500 white cells to the c.mm. Strangely enough he has never had another attack of asthma and his weight is now fourteen pounds greater than it was at that time. Other counts before and after injections of mercury were done at the Isolation Hospital, Southampton. In every case a greater or less increase was found, according to the strength and general condition of the individual.

In November these facts were reported to the Southampton Medical Society and on December 15th, published in the *Medical Press and Circular,* London.

CASE REPORT

The history of a case of furunculosis will illustrate the power of this induced increase in white cells. This patient was seen first in October, 1923. He had had phosgene gas in 1918; during his convalescence boils appeared and had continued, save during the time he was having injections of autogenous vaccine or collosal manganese. His neck, shoulders, and back showed the cicatrices of many boils. He was given one grain of the salicylate every six days for three injections. He had no more infections until June of this year. In that month he came, with a carbuncle which looked as if all the accumulated cocci of the preceding eight months had mobilized at this one region of the dorsal section of his back. The skin over the site of the infection was very thin, broken in spots and a scanty mucopurulent exudate was seen. He was given one grain of the salicylate of mercury; no incision was made in the carbuncle. There was a profuse discharge of pus within two hours, and twenty-four hours after the injection, the core and the several foci were removed by one of his family. When the lesion was seen forty-eight hours after the injection, the cavity left was granulating. The search for the focus from which this and the preceding infections had come was begun by a visit to Dr. Aldridge for an x ray of the roots of the teeth. One bicuspid and two molars were found to have septic roots. These were drawn. The patient was given another injection of the salicylate one month later. There have been no other infections, the patient has gained weight and appears to be normal, so the resistance induced by the injection of salicylate would seem to have controlled this infection for eight months.

In the paper mentioned above it was stated that an attempt would be made to see the effect of the induced increase in white cells on other infections. In November there were twelve patients with trachoma, to whom passage had been refused to the United States and Canada because of this infection. Dr. McGee, the medical officer in charge of the Atlantic Park Hotel, where they were detained, kindly furnished the opportunity for further use of the induced increase in white cells.

Injections of salicylate of mercury were begun in November. Improvement was marked during the succeeding weeks, one grain being given every six days. To the original twelve cases nineteen other cases have been added, during the following months, all the patients being from Russia or Poland. Granules gradually disappeared, bloodvessels again were to be seen, and as the weeks passed the trachomatous lesions were replaced by glistening cicatricial tissue. The mercury was given in series of about ten injections each. The usual local treatment of rolling the lids for the expression of the contents of the granules, application of copper sulphate, or perchloride of mercury was used on all cases.

Of the thirty-one cases, twenty-two patients are in the United States, Canada or South Africa, all

of which countries have strict laws against the admittance of trachoma. All these patients, therefore, have passed all examining officers here and at the ports of destination as being cured of trachoma. Dr. Arthur Zorab, of the Southampton Eye Hospital, acted with me as consultant in these cases, which were under the immediate care of Dr. McGee.

Good results have been seen also in hay fever, pleurisy, arthritis of septic origin, infectious conjunctivitis or "pinkeye," acute otitis media, tonsillitis and influenza, and lymphangitis, following typhoid fever. In not one of these infections has it been necessary to give more than four injections, usually only one.

In the late winter or early spring of this year many cases of encephalitis lethargica were reported in the north of England. A letter was sent to Dr. Stallybras, of the Ministry of Health, Liverpool, recounting somewhat of the observations of the induced increase in white cells here, and suggesting that it might be useful in Encephalitis. As a result the plan was tried by Dr. Rundle, of the City Hospital, Fazakerley, Liverpool, in thirty cases. The staff of that hospital agreed on the benefits accruing from the use of the salicylate—"All cases showed improvement. In some this improvement was striking." Sufficient promise at any rate for a much more extended use of the principle when the infection reappears next winter.

The observations of a very extensive use of this drug for eight years have convinced me that mercury cures nothing, that its value lies in the stimulation of the production of white blood cells, so bringing to bear upon the invading organisms all the purely natural forces of the body against infection.

The Treatment of Diseases of the Maxillary Sinus from the Viewpoint of a Dentist

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It is perhaps fair to state at the outset that the treatment of maxillary sinusitis falls in the majority of instances in the realm of the rhinologist. But on the other hand, the treatment has been inadequate and will continue to be so until there is a universal appreciation of the etiological relation of dental infections to maxillary sinus disease.

The time has not yet come when the frequency of antrum disease due to dental infections can accurately be determined, but our own experience shows that it occurs more often than is generally admitted. Ballenger (1) maintains that the maxillary sinus may be infected from the nose or the teeth, the cases probably being about evenly divided between these two sources of infection. Hays (2) asserts that the majority of cases of chronic disease of the antrum arise from some necrosis of the jaws or teeth. Other authorities differ in their opinions as to the relative frequency with which oral etiological factors are encountered. They agree, however, that with the advent of present day diagnostic methods and the tendency towards complete dental examination in many of these cases, this cause of antrum infection is frequently disclosed.

The following cases were selected from a large number treated during 1923 (3). They present excellent examples of oral and dental etiological factors in maxillary sinus disease.

Case I.—I. S., aged thirty-five, first seen June, 1923. Was referred from a nose and throat clinic for a dental diagnosis. He suffered from chronic maxillary sinusitis for three years. He had received treatment at the hands of two rhinologists. Intranasal treatment (irrigations) was given on three different occasions, with no permanent relief. His general physical condition was good. Wassermann was negative. There was an involvement of the left antrum and patient complained of headache and pain in that region. General mouth hygiene was good. Gingiva and soft tissue were in excellent condition. Several teeth presented well filled cavities. All the upper teeth were present. The upper left first molar was carious and nonvital. Radiograms revealed an area of rarefaction about the roots of the upper left first molar. The tooth was removed using the socalled surgical removal method. The pathological area about the roots was found to involve the antrum. A radical antrum operation was performed and the antrum thoroughly curetted. Four months later the patient had no recurrence of symptoms. The oral opening had completely closed. The striking feature about this patient is that he was treated for over two years before the cause of his trouble was discovered.

Case II.—M. E., aged thirty, was seen June, 1923. Three weeks before presenting himself at the clinic he had a superior right first molar extracted. Since that time he noticed a discharge of pus from the socket and a foul odor in his mouth. Transillumination and radiographic examination revealed the presence of pus in the right antrum. A probe into the molar socket was easily passed into the antrum. The antrum was irrigated daily with warm saline solution, through the molar socket. On the fourth day the washings were free from pus. Four weeks later the molar socket was practically healed and symptoms had entirely disappeared.

Case III.—A. S., aged thirty-nine, was seen May, 1923. Upper left second molar was extracted two months before. Socket had not healed. Patient complained of a discharge of pus from the socket and neuralgic pain. Examination of socket revealed an abundance of unhealthy granulation tissue. Radiograms showed involvement of the left antrum. The socket was curetted and found to lead into the antrum. The antrum was irrigated with warm nor-

mal saline solution daily for one week. Five weeks later all symptoms had disappeared and molar socket had healed well.

CASE IV.—H. G., aged forty-eight, was seen October, 1923. Patient was referred by his physician.

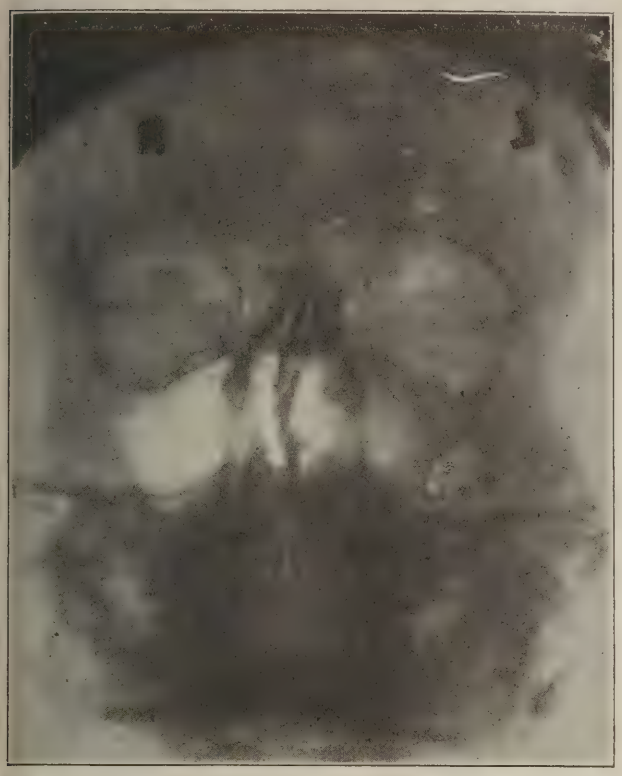

FIG. 1.—Radiogram showing area of rarefaction around the roots of upper first left molar. (Case I).

He had suffered from neuralgia for three years. His general physical condition was fair. He complained of a discharge of pus into his throat and occasionally from his nostril. The superior second and third molars were the only teeth present in the superior maxilla. Radiograms revealed a clouding of the left antrum and an area of osteoclasia about the roots of the upper left second molar. Upon the removal of the second molar, thick foul smelling pus was discharged through the socket. The antrum was curetted. Warm normal saline solution was used to irrigate the antrum every day for a week. Three months later the neuralgic pains had almost entirely disappeared and the patient felt improved in general.

ANATOMICAL CONSIDERATIONS

The antrum of Highmore or the maxillary sinus is the largest air cavity associated with the nasal chamber. The floor of the antrum is usually on a level with the floor of the nasal cavity. It may vary, however, in this respect. The size of the sinus varies in different skulls. Even on the two sides of the same skull great variations sometimes exist. The antrum is pyramidal in shape. Its base is formed by the lateral wall of the nasal cavity and its apex extends into the zygomatic process. The floor of the antrum is formed by the alveolar process. The maxillary sinus communicates with the nasal fossa through the ostium maxillare. Eminences on the floor of the antrum mark the position of roots which may directly communicate with the antrum (4). Normally, the mucous membrane lining the antrum includes a stratified ciliated columnar epithelium, a delicate basement membrane and a tunica propria which is blended with the periosteum (5).

A disease process of dental origin may elevate the mucoperiosteal lining of the antrum without entering the antrum proper and result in a para sinusitis. On the other hand, when the mucoperiosteum is penetrated and the antrum is entered the condition resulting is known as a pyosinusitis. Careful consideration of the various oral and dental conditions that may lead to involvement of the antrum is a very important factor in the proper diagnosing and treatment of maxillary sinus disease. In view of the anatomy and great variation in size and position of the sinuses, it is not surprising to find the following teeth of the superior maxillæ, involving and complicating disease of the antrum: First molar, second bicuspid, third molar, second molar, first bicuspid and cuspid, in the order named.

Without attempting a detailed classification of all the oral etiological factors in maxillary sinus disease, it will not be amiss to mention some of the numerous oral causes of antrum infection.

1. The antrum may be involved in the extraction of a tooth whose apex entered the antrum. This leaves an opening from the mouth to the antrum. The opening may heal without any untoward results. In some instances, however, it may be a portal of entry for microorganisms and contents of the oral cavity which may result in infection.

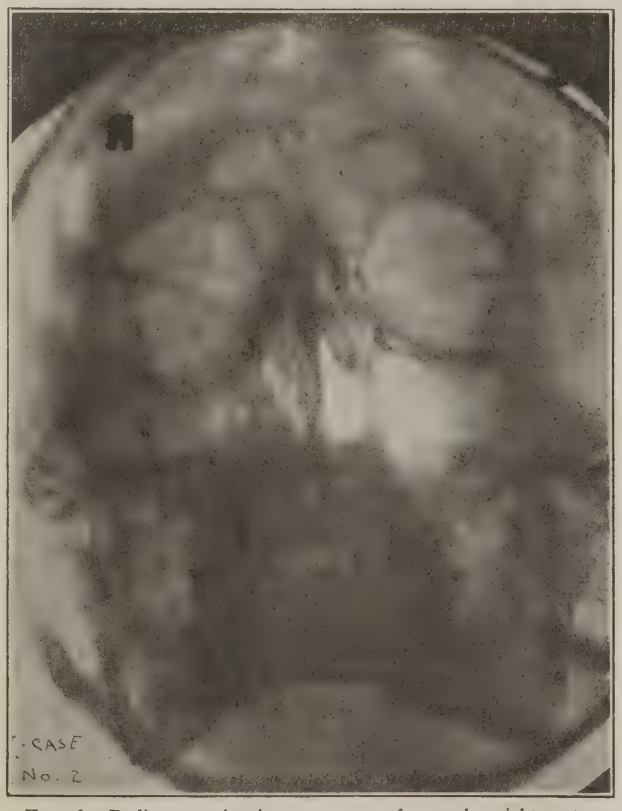

FIG. 2.—Radiogram showing presence of pus in right antrum (Case II.)

2. In performing root therapy on a tooth, the apex of which is in the antrum, it is possible to involve the antrum. Foreign bodies, such as root canal

filling materials, or parts of instruments, medicaments of a very powerful nature as well as pathogenic microorganisms, may be introduced into the antrum during this operation, particularly when carelessly performed.

3. It happens occasionally that a maxillary cuspid or third molar enters into or is situated in close proximity to the antrum. In the removal of impacted, unerupted, malposed and supernumerary teeth it may be impossible to avoid the antrum. Moreover, it is well to bear in mind the possibility of forcing such a tooth into the antrum and of pathological conditions developing about these unerupted teeth.

4. In the socalled surgical removal of teeth, particularly when retained roots are to be removed, the antrum is often involved. An inexperienced operator in the field of oral surgery may penetrate the antrum while using a surgical burr, gouge, chisel, elevator, or forceps. Involvement of the antrum, due to the removal of too much bone, in the performance of the operation known as alveolectomy, has been observed recently. This accident usually occurs in the third molar region.

5. Probably the most important etiological factor is the group of pathological processes, namely, the acute and chronic dentoalveolar abscess, cysts, necrosis and osteomyelitis. The primary origin of the most common of these pathological conditions, the dentoalveolar abscess, usually is putrefaction and fermentation in a pulp canal, following devitilization by caries or trauma. Invasion of pathogenic microorganisms into this area of lowered resistance occurs readily. Whatever the cause these areas increase in size and often penetrate the antrum. These processes often progress insidiously and are perceptible neither to the patient nor observer. Pus may be discharged into the antrum for some time, from such a focus, before it is discovered and treated. Cysts of the antrum are not uncommon. They may be of various types. The dentigerous and dental cysts are the two most common types. The dentigerous cyst develops from cystic degeneration of the wall of the tooth sac. Dental cysts may develop from diseases of the teeth and adjacent structures. These cysts may extend to and break down the wall of the antrum, and wholly or partially obliterate the antrum. Necrosis and osteomyelitis may develop from diseases of the teeth, pericementum or alveolar structure. They may result in a widespread destruction involving the antrum.

6. Another cause of antrum involvement is trauma and fractures. Teeth may be entirely or partially luxated into the antrum due to injury. Fractures of the superior maxilla are sometimes complicated by antrum involvement.

7. There is a condition known as interstitial gingivitis which sometimes leads to affection of the antrum, particularly when the inflammation is of the ulcerative type. The term interstitial gingivitis includes not only the gum borders but the interstitial tissues as well and implicates all the alveolar structures: including the pericementum, connective tissue, gums and bone (6).

8. The various neoplasms of dental and oral origin may involve the antrum. Owing to the fact that the antrum is normally a hollow organ, these growths may attain considerable size before they are detected.

9. In this class we may list special etiological factors, such as lesions of infectious diseases in the mouth. Among these diseases may be mentioned syphilis, tuberculosis and actinomycosis. They may attack the antrum via the periosteum and bone of the superior maxilla.

These considerations of the etiological relation of oral conditions to disease of the maxillary sinus prove conclusively that a careful dental diagnosis is indispensable in all cases of antrum infection. Moreover, they show that the dentist and oral surgeon must realize his great responsibility when called upon to diagnose or treat any of these conditions. Great care and a wide clinical experience are essential if one is to operate upon teeth or oral lesions which may give rise to involvement of the antrum. The operator must avoid injudicious use of instruments, particularly the curette and gouge. And while the treatment of the antrum belongs primarily to the rhinologist, a competent oral surgeon can obtain excellent results in cases of dental origin.

It is exceedingly difficult to draw a sharp line of demarcation between the field of the oral surgeons and that of the rhinologists. The oral surgeon should not attempt to treat cases of nondental origin, while the rhinologist will serve the interest of his patient best in the realization that many antrum affections of dental origin fall within the sphere of a competent oral surgeon.

SUMMARY

1. In the treatment of maxillary sinus diseases, the rhinologist often fails to consider the possibility of oral etiological factors in the case.

2. There are a variety of oral and dental causes of antrum disease that can be detected only by a well trained dentist.

3. The examination of the oral cavity by the dentist should include radiograms and transillumination.

4. Every case of antrum disease calls for a thorough mouth examination.

5. A more thorough understanding and better cooperation between the physician and the dentist will benefit the patient, alleviate suffering and even disability.

I am indebted to Dr. B. Stivelman, medical superintendent, Montefiore Sanatorium, for his kindness in correcting the proofs; and to Dr. Charles Vetter, whose instruction and cooperation have made possible this paper.

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The Influence of Röntgen Rays on the Endocrine Glands*

With a Contribution to the Problem of Rejuvenation in Women

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In writing the title of my paper, The Influence of X Rays on the Endocrine Glands, I almost felt tempted to add as a subtitle, "as much as we know about it."

Indeed, in reviewing the whole subject of endocrinology, I feel that our actual knowledge of the functions of the ductless glands is almost as limited, as must have been the knowledge of the qualities of blood, before the invention of the microscope. We have, however, come to realize more and more the great importance those glands have and since we have succeeded in diagnosing a pathological function of this or that gland, we have made every effort to find some means to influence and balance those pathological functions. So far, we had practically only one method, namely, the use of organotherapeutic extracts given in the form of tablets by mouth or in the form of a solution by hypodermic injections. Only those who have worked long enough with these methods know what remarkable clinical success we have often been able to obtain, and, on the other hand, how deeply disappointed we often were being at the same time unable to explain the reason for our failures.

During the last few years, two other methods to influence endocrine functions have become known. First, surgery in the form of transplantation of glandular tissue and in the form of vasoligation, better known as the Steinach operation. Second, the use of the röntgen rays.

It is the latter method that I intend to discuss but not without apolozing to the röntgenologists, into whose field of work I am apparently intruding. However, as an endocrinologist, I have had so much occasion to appreciate the tremendous value of the x ray that I feel sufficiently encouraged to talk about it and recommend its use. On the other hand, I have no intention of entering upon the technical side, which I will naturally leave to the much better informed specialist.

I may, however, be permitted to touch briefly upon a theoretical question, which I have discussed personally a great deal on my recent European trip. It is the much discussed question of the stimulation dose. It is not for me to decide this question one way or the other, but its discussion is more acute in the endocrine application of x ray than in any other field of röntgenology. It is a fact that we are able to improve glandular function by x ray radiation. To inhibit and depress an overfunction is easily understood, if we use destructive doses. But how can we explain an increased glandular activity without assuming a direct stimulation?

Professor Holzknecht in Vienna and his school absolutely and radically deny the existence of an x ray dose that will stimulate function and act without destruction. "In the beginning is death," says Holzknecht. That means x rays always destroy; destroy little in small doses,—destroy much in larger doses. Only in very small doses they may be indifferent to the living cells. Holzknecht, however, does not deny that frequent increase of glandular functions follows their radiation. His explanation is that the gland in certain pathological conditions cannot discharge the hormone properly but accumulates it in their cells. X rays will now injure these cells so that they cannot longer hold the hormone and a rather sudden discharge with the accompanying clinical symptoms takes place.

The opposite view is taken by Manfred Fraenkel in Berlin, who possibly is the most prominent worker in this special field and was the first to call attention to the great value of *Reizbestrahlung* (stimulating radiation) in general. In his many writings, he has again and again emphasized his belief in direct stimulating influence of weak x ray radiation and with Catani of Zurich he speaks of a biopositive effect of x rays (that means a life aiding influence) compared to the destructive bionegative effect of prolonged exposures. Most röntgenologists, with whom I have discussed the matter, share Fraenkel's views on this point.

In a number of animal experiments and tests on human beings, he was able to show that organs and tissues, which in a physiologically normal state cannot be influenced by x rays, become more sensitive and actually can be influenced as soon as they are in a physiologically changed and abnormal condition.

This law, as Fraenkel directly calls it, naturally is of greatest importance when it comes to radiation of endocrine glands and also of connective tissues to which an internal secretion in all probability will have to be accredited. This latter point is of special importance in the treatment of cancer, as we will see later on.

A book by Manfred Fraenkel called *The Rejuvenation of Women* (with a contribution to the cancer problem) has just been published by Bircher in Berne and is receiving widest attention in Germany and Austria. This book mainly deals with x ray radiation of the female genital organs and in my discussion of x ray radiation of the various glands, I will begin with the ovaries.

The ovaries, as well as the testes, deserve a special place among the ductless glands, since both are so-called mixed glands, having an internal, as well as an external secretion. At least, I feel justified in referring to ovulation as well as to the production of spermatozoa, as an external secretion. It seems fairly well established that this external secretion is a function of a different group of cells within these glands than the internal secretion and since it has been shown that these two sets of cells are not equally sensitive to x ray radiation, the peculiar relation of ovaries and testes to x ray radiation is apparent.

*Read before the annual convention of the American Association for Medicophysical Research, Chicago, September 27, 1924.

The clinical changes following a strong x ray treatment of ovaries are too well known to deserve a lengthy discussion. An x ray dose that will remove a fibroid tumor of the uterus is usually more than a castration dose to the ovaries and is followed by all the corresponding clinical symptoms, similar to those following surgical castration; however similar only, not quite identical.

If the x ray dose was not large enough to destroy the entire ovary—the interstitial cells of the ovaries together with the follicular apparatus,—the complete symptoms of castration do not appear. Frequently an almost rejuvenating effect has been observed. Steinach and Holzknecht, as well as others, have described this fact and the Steinach method of rejuvenation for women is based on these observations. The explanation that Steinach offered is that the same x ray dose that destroys the follicular apparatus, causing sterility and amenorrhea, stimulates the interstitial tissue, or as he calls it, the female puberty gland,—thus producing an increased output of internal secretion. This view is shared, especially by Groedel, who has reported excellent results with ovarian radiations in climacteric complaints.

According to Fraenkel and my own observations, it is not necessary to use an x ray dose large enough to destroy the follicles in order to produce a stimulation of the inner secretory apparatus of the ovary. A much weaker dose, although repeated several times, has proved sufficient to balance a gonadal hypofunction. Besides Fraenkel, many others have used weak x ray radiation for the ovaries and have reported satisfactory results, for instance, Thaler in Vienna. He compared the result with the shaking up of a watch that had stopped and now resumed its normal work.

In a similar way, I think we should explain the effects of radiation on all glands, and as we should not differentiate too sharply between hypofunction and hyperfunction of a gland (unless pronounced) and rather speak about dysfunction, we should not separate too radically an inhibition from a stimulation dose. The same dose may in a given case inhibit and stimulate a gland at the same time, because each endocrine gland has a great number of functions, due to the polyvalency of their hormones. Besides, the same dose may inhibit glandular function in one patient and stimulate in another. The biological factor in x ray work is still too often neglected. Therefore, I would suggest that we designate those radiations which are not meant to destroy and definitely suppress function as regulating or balancing radiations, in differentiation from a "depressing or paralyzing" dose, whereby it is understood that such a regulating treatment may have in a given case a purely stimulating and in another a purely retarding effect. Our regulating x ray dose here would correspond to Fraenkel's biopositive radiation while the bionegative radiation would be a paralyzing dose. With this explanation and designation, we might be able to bridge over some of the differences between the adherents and the opponents of the stimulation dose theory.

The difficulty in treating the ductless gland by x ray naturally is to determine, first, which gland is to be exposed, and second, how strong or how frequent the exposure should be. I usually begin with a mild exposure, one tenth of an erythema dose or less and let individual response of the patient guide my further treatment. In order to exclude purely suggestive results, I frequently follow Holzknecht's practice in giving the first exposure as a pseudo-treatment, using a lead filter. As a rule, large doses are rarely necessary to regulate glandular function because they usually do not succeed where small or moderate doses have failed.

Let us now return to ovarian radiation. For the retardation of age, I, myself, have treated over one hundred patients showing signs of a congenital or acquired hypofunction of the ovaries. As you notice, I am not using the word rejuvenation because this word, as I have frequently stated before, leads too easily to exaggeration and therefore I prefer to speak about restoration or regeneration or, as Paul Kammerer calls his book on the subject, *Prolongation of Human Efficiency*. I have used from three to six x ray treatments, seven to ten days apart, never applying more but often much less than one quarter of the socalled castration dose at one time. I may be permitted to report briefly my own experiences here by giving you the conclusions only, as time will not permit going into details of case histories. A great majority of my patients were women around the menopause, some, however, as much as fifteen years after, their ages ranging from thirty-five to sixty-five. The principal complaints were those incident to the menopause and premature or beginning senility, declining physical and mental vitality, lack of endurance and power of concentration, constant fatigue, waning memory and general decrease of those faculties that were most vital to the individual in question. In over one hundred of my cases, I have not used the original Steinach method, consisting of x ray treatments alone, but in addition to the x ray treatments, I have given a series of fifteen to thirty diathermia treatments to the ovaries, one every day or every other day. This combined treatment suggested itself to me after I had learned from Steinach a year ago that he was then using diathermia for the purpose of regeneration.

This method found its way into the press a few weeks ago, but unfortunately in such a misleading manner that I feel it incumbent upon me to give at least a brief description of it today. Further details, as well as the fundamental animal experiments, will in due time be published by Steinach. Professor Steinach feels rather hard hit by some newspaper publicity given to him and his work, so much so that I welcome the opportunity to mention this fact here and since some misunderstanding has arisen about my personal relationship to him, (I have been called his sole representative, etc.) I am also anxious to state that this relationship consists in my being in frequent communication with him, in my practising his methods in accordance with his teachings and being in general an adherent to his theories. The cause of those misunderstandings probably lies in the fact that I was the first one to introduce his methods to the American profession and the first to publish corroborating evidence.

After this personal digression, let me return to the results, which I had with my combined x ray

and diathermia method, in which Dr. Wyser of the x ray department of the Mount Sinai Hospital, New York, has assisted me. The course of treatment usually took from four to six weeks, each diathermia treatment from fifteen to twenty-five minutes. Both ovaries were treated at the same time, the electrodes placed one above the symphysis or intra vaginam and the other on the sacrum. The idea naturally is that by producing a hyperemia in and around the ovaries, an increase of function will result. In applying x ray radiation immediately afterwards, a smaller dose is required to produce the desired effect on the heated and, therefore, more sensitive organ. The heated part of the skin is either protected and x rays applied from another direction, or the skin allowed to cool off sufficiently.

The result that I achieved in about one hundred cases is summarized in the following: In about seventy-five per cent. of my cases, a distinct improvement of glandular functions was accomplished. Objective evidence was a drop of blood pressure, often to a very marked extent, especially in cases of functional hypertension, an increased appetite and gain of weight in emaciated patients, a change of skin reaction toward developing the red thyroidal line, replacing a white adrenal reaction. In this change, I see an indication for better thyroid activity induced by improved ovarian function. This is quite parallel to the effects seen in men after vasoligation. The menstruation often received a marked alteration. In some cases, menses appeared again after many months' cessation, normal in character and continued regular, in one case already over a year. In other cases an irregular and abnormal menstruation assumed again the character of years ago. In some cases, however, the mild radiation of the ovaries did not succeed in checking the onset of the menopause or removing its troublesome symptoms. Here pituitary or thyroid radiation or both would be indicated according to the patient's endocrine constitution. Occasionally, I have distinctly observed a stimulated growth of hair and nails, both assuming a healthier appearance. The same was shown in the skin, in the form of a better complexion and tension. I purposely avoid the word youthful in order to forestall exaggerated ideas of a rejuvenated appearance. The lay mind is already connecting the Steinach treatment too much with the beauty parlor. It is not a beautifying but a reenergizing treatment.

Regarding the subjective symptoms, I want to be brief and not enumerate details, since autosuggestion cannot always be excluded. However, the majority of women who underwent the treatment asserted that it accomplished for them what they wanted and that they felt their constant and excessive fatigue gone and their vitality of former years returning. All my observations are similar to those of Fraenkel, as described in his book.

The length of time that the regeneration and restoration of efficiency can last is difficult to judge from only a few years' experience. A year ago, I reported my first six cases, treated with x ray alone (1). Three patients I have been unable to reexamine but the other three have remained in excellent health. One patient (Case I) was already sixty-four years of age at the beginning of the treatment. In one case (Case III) the patient received only one treatment, I had to repeat two x ray radiations with perfectly satisfactory result. The patient, now over fifty is doing a great deal of strenuous work, that she could not do before the treatment.

Some patients, naturally, have failed to respond sufficiently although they were benefited somewhat. Total failures I consider those where not the slightest objective symptom could be discovered to corroborate the subjective ones, even if they were mentioned by the patient. Those failures will probably have to be explained by lack of response from the ovaries themselves or from other glands to the ovarian stimulation and in those cases I have tried to influence other glands directly by x ray, chiefly thyroid, pituitary and adrenals.

Before discussing the indications for x ray treatment of other glands, I wish to summarize the indications for ovarian radiation and say a few words in regard to the testes. In clinics in Vienna and Berlin, where I had the opportunity to observe the methods in use, doses to inhibit function, the socalled sterilization dose is used in cases of hemorrhage and in benign tumors of the uterus, in cases of adnexal diseases, for the prevention of pregnancy and in cases of osteomalacia. Weaker doses for the purpose of balancing and stimulating function are used in cases of amenorrhea in younger women; then for the purpose of rejuvenation and regeneration in the sense of Steinach and to combat the distressing symptoms of the menopause. In the latter cases however, as we will see later on, pituitary radiation is gradually gaining preference. Fraenkel mentions remarkable results with his mild ovarian radiation, in certain cases of Graves's disease, in pathological obesity and epilepsy.

While the indication for ovarian x ray radiation is rather large, the treatment of the testes is not only quite limited but also rather unsatisfactory, as far as our present experiences go. I have used röntgen rays on the testes in cases of supposed hypofunction, administering at the utmost the sterilization dose in from three to five treatments. We can this way easily obtain temporary sterility but the clinical symptoms of an improved gonadal function were not very apparent. The effects of radiation cannot at all be compared with those following vasoligation.

A great deal more could be said about the effects of x ray on the male and female gonads, but it would lead too far and I would rather mention some of the work that is done in Germany and Austria in regard to other glands.

The discussion of the male gonad would not be complete without at least briefly mentioning the prostate gland. That prostatic hypertrophy, especially of the soft character, readily yields to the x ray radiation is well known. It is, however, still somewhat doubtful whether the large doses that are employed for this purpose directly destroy the prostatic tissue, or whether the scattered rays hitting the testes are also responsible for the result. The observations made after the Steinach operation in regard to the decrease of prostatic hypertrophy seem to support the latter theory. On the other hand, the doubtful results with testicular x ray radiation, speak against it. Philips, New York, for instance, has not seen any

favorable effects on the hypertrophied prostate by testes radiation alone.

Let us now come to the thyroid and pituitary glands. The thyroid was the first gland to be subjected to x rays. A great deal has been written about röntgen treatment of goitre and Graves's disease, so that I do not have to dwell on this indication, especially since large paralyzing doses are employed and we are more concerned here with the mild regulation doses. Such doses are recently being used for the thyroid, for reasons which will be rather new to many of you. I have, for instance, found mild thyroid treatments very valuable in addition to weak ovary radiation in cases of premature and physiological senility, amenorrhea and climacteric complaints. I fully agree with Fraenkel's and Leschke's opinion that mild radiations of thyroid, pituitary and adrenal glands, in addition to the ovaries, will play an important part in the problem of rejuvenation. I personally have employed these combined radiations already in several cases, as mentioned before, and have the distinct impression that they offer greater possibilities than when ovarian treatment is employed alone.

I also repeat that the difficult part is to decide in the individual cases which gland or glands should be radiated, where we should try to inhibit function by proper doses, and where only the regulating and more stimulating effect is desired. Only a careful study of the patient's endocrine makeup and deficiencies can give us the necessary information.

Let us return to the thyroid alone. Holzknecht and his assistant Borak in Vienna, have told me of a highly interesting series of treatments, which since they are now being published, I am probably allowed to report at this time. They have treated thirty patients, whose chief symptom was the great distress of blushing. Fifteen of these patients were treated with thyroid radiation and twelve of them were decidedly improved or cured. The other fifteen were treated with pituitary radiation and only two have shown an improvement. Thinking of the great vasomotoric influence of the thyroid, we can very well understand these results, either assuming that an inhibitory effect or an impetus to better balanced function has been given by a regulating dose.

While pituitary treatment has decidedly failed in these cases, a large field of indications for pituitary radiation has been opened by the recent work of Viennese clinicians and röntgenologists, of whom I will only name Holzknecht, Borak and Werner. Of those who have called attention to the possibilities of pituitary radiations before them I should mention Fraenkel, Hofbauer, Sahler and Stettner.

A few words about the technic. A small field about two square centimetres on each temple is exposed and in the average one quarter to one half of an erythema dose is applied. Kriser, Vienna, has devised an ingenious instrument, which is attached to the patient's head in such a way that through a kind of pointer, any number of places are indicated anywhere on the patient's skull, where x rays would always hit the pituitary. For weak radiation, the instrument is possibly too complicated, especially since the two fields easily to be indicated over the temples are sufficient. For the frequent treatments of pituitary tumors, however, Kriser's apparatus is of great value.

The indications for pituitary radiation are manifold. Borak in Vienna has just published a very excellent article on The Therapeutic Successes through Röntgen Radiation of the Hypophysis. He considers a number of indications for pituitary radiation already so well founded that they deserve fullest attention from the medical profession. We need not discuss the treatment of acromegaly since the main purpose of x ray treatment in this disease is the destruction of a tumor. The most frequent indications for regulating radiations of the pituitary are the following: amenorrhea in younger women, especially those cases where mild ovarian radiations have failed, dysmenorrhea and the complaints of the menopause, such as flushes, sudden perspiration, attacks of dizziness, headaches, pruritus vulvæ, etc. Promising observations have further been made in the treatment of certain cases of diabetes, pathological conditions associated or caused by a hyperfunction of the pituitary are more amenable to treatment than those due to a hypofunction. He radiates the pituitary from one to four fields, that means from both temples and from the forehead using about one third of an erythema dose from each field.

Next to the pituitary, the adrenal glands have to be considered but unfortunately very little is known as to their reaction to x rays. Zimmern and Cotenot have seen a decrease of high blood pressure which, however, could not be verified by Groedel. Drasel has seen a decrease of blood sugar in diabetes but positive confirmation likewise is lacking. I myself have seen an occasional tonic effect from very mild exposures and would suggest trying them in cases of asthenia. I am, however, not in a position as yet, to give any definite indications for adrenal radiations.

More and better founded are the indications for radiation of the spleen. With much larger doses than usually applied to endocrine glands, an increase of function has been observed. Stephan succeeded in increasing the coagulability of the blood to a marked extent. Corroborating evidence was furnished by Fraenkel and Werner, who could control hemorrhages in normal persons, as well as in hemophiliacs. A whole erythema dose and more was applied in order to produce this functional increase. Here is an example of how relative the conception is of stimulating and an inhibiting dose.

Closely related to the spleen is the liver. A checking of hemorrhages seems to be possible through liver radiations also and x ray exposures of either gland have shown to produce a marked increase of urea output.

I come now to the discussion of the last gland, the thymus, which will give me an opportunity to also touch upon the new and daring views of Manfred Fraenkel in regard to cancer.

The radiation of the thymus has become rather well known in connection with the treatment of psoriasis. Klingmueller, Bruck and others have described good results, assuming an increase of thymus secretion following radiation. Others again have denied any influence. Thymus radiation has also been described as successful in certain cases of Basedow's disease and Fraenkel believes that mild

thymus radiation, together with radiations of other endocrine glands, have a strong influence on the growth of connective tissue. In this he sees the protection against the invading cancer cells, at the same time attributing to connective tissue the functions of a gland with an internal secretion. He is convinced that x ray exposures of cancerous tissues decidedly too weak to destroy anything, can actually bring about a cure of the cancer and he proposes as a new method of cancer treatment by x ray, to use mild doses on the cancer itself with the intention of strengthening the surrounding connective tissue instead of injuring it by destructive doses. He would rather leave it to the stimulated and strengthened connective tissue to fight against the cancer than to the direct influence of enormous x ray applications. The mild radiations of other endocrine glands, especially those that show signs of weakness in the individual case, he likewise recommends and this is the way he concludes his aforementioned ingenious little book on *Rejuvenation of Women and the Cancer Problem.* He says:

"We must not be satisfied to assist the organism in which a cancer already exists by increasing the function of the ductless glands and thus combat cachexia, but we must already begin to use function improving x ray doses in cancer suspects, for instance, members of socalled cancer families. In these people, we must pay careful attention to early symptoms of age and must try to accomplish a rejuvenation in the sense of Steinach by systematic radiation with biopositive doses. In the huge surface of the skin, in the numerous glands with an internal secretion that are distributed everywhere, working harmoniously in wonderful relationship to each other, nature has presented us with an extraordinary gift, whose importance we only now begin to grasp. To utilize wisely this gift according to the laws of nature by applying x rays in an appropriate way must be our next goal in combating and furthermore in the prevention of cancer."

For this very new and rather sensational idea, Fraenkel lays claim to sufficient clinical justification, which he has drawn from the observation of six thousand cases. The linking of rejuvenation with the cancer problem itself, is not new. A great benefit for cancer cases has justly been maintained for the Steinach operation but the idea of cancer prevention instead of cure, almost comparable to vaccination, by systematic rejuvenation treatments is quite startling in its conception. I can personally say nothing as to the practicability but I am satisfied to say that a regeneration and restoration of the vitality of younger years is actually possible for the aging organism,—the most practical method in my opinion being the Steinach operation in men and systematic regulating x ray radiation of the endocrines in women.

REFERENCE

BENJAMIN: *New York Medical Journal,* December 19, 1923.

237 CENTRAL PARK WEST.

The Effect of Ultraviolet Light on Blood Chemistry

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An amazing mass of clinical data have accumulated within the past decade regarding the therapeutic benefits from quartz or ultraviolet light. Those of us who have been working with this agent have observed very significant and absolute surefire results accrue in a patient's tissue metabolism. We don't know yet how the effect is produced in elaborate detail. But we do know that in many instances quartz light is a specific and also an absolute life saver.

It will be of scientific interest, therefore, to study the comparative blood chemical findings on a male patient after six consecutive years of quartz light therapy, from the age of thirty-eight to forty-four. Likewise to observe the result comparatively after two subsequent years, from the age of forty-four to forty-six when no ultralight therapy was administered.

June 9, 1916. Blood taken by Dr. William G. Lyle, Harriman Foundation Research Laboratory, Roosevelt Hospital. Patient a male, aged thirty-eight years.

On August 28, 1922, six years later, the patient then aged forty-four, I had Dr. Oliver S. Hillman make a complete blood chemical analysis. Note the six year comparisons:

1916	1916	1922
Blood pressure	125 (systolic)	120
Hemoglobin	88 per cent.	96
Differential count		
Polymorph	42 per cent.	64
Lymphocytes (small)	50 per cent.	30 per cent.
Lymphocytes (large)	1	2
Eosinophiles	5	4
Basophiles	1	0
Red blood cells	No count made	5,110,000
Whites	" " "	7,000
Total nonprotein nitrogen.	29.4 mgm. per 100 c.c.	34.6
Urea	28.5	23.9
Creatinine	0.57	1.1
Uric acid	2	3.2
Sugar	106	100.0
Carbon dioxide	47 per cent.	66.2 per cent.
Chlorides	not taken	473
Urea nitrogen	" "	11.2

In the beginning of treatment of this patient, the dose from an alpine sun ultraviolet lamp started at one hour a week, twelve inches from the burner, the naked body being exposed and its areas shifted every few minutes. After six months two burners were used. Patient's general improvement became quite apparent, both in physical endurance, in relief from insomnia, in digestive ability and in sexual power.

During the second year the dose was increased to two hours a week, the burner being eight inches from the naked body.

During the third, fourth, fifth and sixth year, the patient became more adept, and the dose was increased up to four and occasionally five hours a week. Often the burner would be placed six inches and frequently four inches away, when the heat could be endured. Patient's skin became deeply tanned, and his physical and mental condition reached an ideal state both subjectively and objectively.

As will be observed from the 1922 blood chemical analysis, the significant signal organic benefit in the blood stream was in the jump of oxidizing power of the carbon dioxide—a jump of twenty per cent.

Between the years 1922 and 1924, patient discontinued treatment, not even enjoying the sun's rays at the seashore. His diet was much reduced, and on July 24, 1924, at the age of forty-six, the patient presented himself for another blood analysis. I had Dr. Oliver S. Hillman again take a complete blood chemical checkup. It registered

Blood pressure 118-76; hemoglobin	90 per cent.
Red cells	4,700,000
White cells	4,200
Color index	.95
Polymorphonuclears	39 per cent.
Small lymphocytes	56 per cent.
Large lymphocytes	5 per cent.
Eosinophiles	0
Basophiles	0
Nonprotein nitrogen	42.5 mgm. per 100 c.c.
Urea nitrogen	17.3
Urea	37.0
Uric acid	4.2
Creatinine	3.2
Sugar	147.0
Chlorides	487.0
Carbon dioxide	66.2

The comparative study of these findings after a two year period without any ultraviolet light reveals a drop in hemoglobin, red blood corpuscles, white corpuscles, a drop in the polymorphonuclears, and a marked rise in blood sugar, nonprotein nitrogen, uric acid and creatinine. It is interesting to observe that the carbon dioxide combining power with the blood plasma remains unchanged, and still stands at sixty-six per cent., whereas eight years before it stood at forty-seven per cent., from which point it was built up, and at which level it is still holding.

The condition of the patient clinically is not that of a marked virility such as he possessed two years ago when he terminated his quartz light therapy. He does not have the degree of endurance he possessed. His insomnia has returned. His digestive mechanism is not running smoothly, and he states furthermore than his sexual power is likewise greatly lowered contrasted with the period of uviol radiations.

In conclusion, therefore, while we do not yet know how quartz light produces its blood chemical and clinical changes, the above six year record with large doses of quartz light constitutionally upon the naked body consistently carried out, and the contrasting two year period without any uviol radiations whatsoever, show very conclusively that such physiological changes as are produced from quartz therapy are eminently constructive, and belong to the plus side of the patient's vitality ledger.

There is no case reported in all the literature which covers with blood chemical analyses a period of six years with a subsequent lapse of two years, and it will be interesting to make further observations and analyses along this line. Someone has described quartz light as an ultraviolet vitamine. For want of a better term, it is certainly a fitting one.

24 West Fifty-ninth Street.

Closure of Bronchial Fistula of Twelve Years' Standing by Use of Radium

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The nonsurgical treatment of a bronchial fistula has always been a troublesome task. Following the rupture of a pulmonary abscess into the pleural cavity the opening into the bronchus may close some weeks after the resulting empyema has been drained, but this satisfactory result is by no means a constant one. Usually, after months of surgical care have failed to bring about the closure of a bronchial fistula, the sufferer, on account of distressing symptoms, will submit to further surgical intervention with results that are not always satisfactory, as permanent closure of a divided bronchus is not always possible. Furthermore, since the operation is one of very considerable gravity, any other method offering possibilities of success may well be worth considering.

The characteristic, extensive fibrosis which follows the application of radium to vascular tissue (as in the treatment of an angioma), suggested the use of radium in the following case of long standing bronchial fistula:

Case.—Patient, male, forty-five years old, weighing 270 pounds, had an empyema following an attack of pneumonia. Under local anesthesia, a portion of a rib was resected and the pleural cavity drained. At the end of one year there was no improvement in patient's condition, and, as at the age of seventeen (?) he had been operated upon for suppurative cervical adenitis, the continuation of the discharge with the persistence of the bronchial fistula suggested the possibility of a tuberculous process. During a period of more than twelve years drainage ceased several times. Upon one occasion the patient seemed perfectly well for about eighteen months. During these years it was necessary to reopen the pleural cavity many times, and upon each occasion the opening into the bronchus was always in evidence.

For the greater part of this long period the discharge was so profuse that dressing twice a day was necessary. Infection of the skin covering the chest caused much distress and for some years daily treatments of the entire chest wall with the quartz light was the only means of securing relief. Upon several occasions the long sinus seemed about to close, but this desideratum always represented a false hope, and the necessary reopening and extensive dissection of the fibrous pyogenic membrane running through a greatly thickened pleura was always followed by the whistling gurgle through the bronchial fistula.

As a forlorn hope the use of radium was suggested, the idea being entertained that the tough fibrous membrane would disappear, and that deep introduction of the radium element might produce a fibrosis, with subsequent contraction of the vascular pulmonary tissue in the neighborhood of the patulous bronchus bringing about its closure. Within a period of ten weeks about 4200 milligram hours of radium treatment were given, directed at different portions of the sinus, and within four months the thickened scar tissue had disappeared. The sinus, which measured about seven inches, gradually closed and for the past eighteen months the patient has been perfectly well. I can not but feel that the patulous bronchus was responsible for the many years of drainage from the pleural cavity and that, following the destruction by radium of the endothelial cells lining innumerable capillaries in the pulmonary tissue surrounding the ruptured bronchus (thus transforming the capillaries into fibrils—which automatically contract), the opening into the bronchus was occluded. To have attempted its closure by surgical intervention in this patient weighing 270 pounds would have been most hazardous, and indeed it was never considered.

I have so often seen satisfactory results following the use of radium in conditions where fibrous indurations, by interfering with drainage, were impeding recovery, that I feel in this element we have a most potent agent to aid us when confronted by abnormal areas of fibrous tissue.

Hydrophobia and Carriers

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The main theme of this article is carriers in rabies; but it is essential to give a synopsis of the disease beforehand. Hydrophobia (rabies canina or lyssa) is a Greek derivative meaning the dread or fear of water. It is a disease of dogs and other animals and is invariably transmitted to man by the bite of a rabid animal. Delauny, Gohier, Fernel, Schenkins, Sanzoni, and Alfadi, believe that the disease is transmissible by the alimentary tract; Decroix, however, is opposed to this view, and to prove it he ingested the saliva of a mad dog without contracting the disease. It is very likely that the digestive juice destroys the virus; but this would only be true if the walls of the alimentary canal were intact and the digestive juices normal; otherwise there is a possibility of the ingress of the virus.

The disease is infectious and might be transferred even in the incubation stage, i.e., before the symptoms have set in. Not every person bitten by a rabid animal develops hydrophobia. This fact might be accounted for in one of three ways, viz, the saliva of the biting animal might be wiped off the fangs while penetrating the clothes of the bitten person; the inoculated virus or its dose might be weak, or the person bitten might have an acquired or inherent immunity. Rabies can be produced otherwise than by the saliva from a bite, namely, by inoculating with the fluids and tissues, especially the brain and cord of a rabid animal.

ETIOLOGY

Hydrophobia is an inoculable and transmissible disease. It therefore must be due to some germ which so far has not been definitely identified. Pasteur found round and refractive bodies in the central nervous tissues. Fol was able to isolate and cultivate round granules from the marrow of infected animals. Babes produced rabies by inoculating with a microbic culture obtained from the nervous substance of rabid animals. Bruschettini found a bacillus and Memuro a blastomyocyte, as causative factors of the disease. Negri and Guarniere ascribed it to protozoa. Negri in 1903 found the bodies, called by his name, in the nerve cells of animals dead with lyssa. They are oval or round and consist of protoplasmic masses containing inner bodies. They likewise have what resemble spores. These bodies are abundantly found in the street virus but with difficulty in the fixed one. In the stage of excitement the Negri bodies are found in numbers. They become smaller in size and ultramicroscopic with the abatement of the virus, especially about the seventh day. Negri considered these bodies to be protozoic in nature.

Babes, however, showed that they were end results of the rabic infection rather than the factors causing it. Proescher demonstrated numerous spirochetes, cocci and bacilli as the cause of the disease.

In 1903 Remlinger demonstrated that the filtrate from a Berkefeld filter of brain matter of infected animals, contained the infection; he thus proved that the disease was due to a filtrable virus. Noguchi in the same year discovered pleomorphic, chromatic bodies which colored well with the Giemsa method; they are filtrable, invisible and according to him play the principal pathological rôle in the production of the disease. Puntoni and Bouffard believe in the plurality of the virus of hydrophobia.

The virus of rabies in rapidly destroyed by a temperature of 90° C. (Roux); it is likewise de-

stroyed within twenty-four hours at a temperature of 45° C. Cold conserves the virus; Gibier kept the cadaver of a rabbit dead with rabies for ten months at a temperature of 10° C.; at the end of this period the virus was still virulent. Drying or desiccation rapidly destroys the power of resistance in the germ of this disease.

The microbe of hydrophobia is found in the saliva or salvo of the infected animal; Gruner and Count Salm proved this in 1813; this was later confirmed by Magendie and Breschet, who inoculated two dogs with buccal saliva of a rabid man; one of the dogs developed the disease. Hertwig showed the virulence of the saliva from the parotid gland.

The virus may likewise be found in the lacrymal and mammary glands, bronchial mucous membrane, pancreas, and the suprarenal capsule of infected persons; some maintain that the milk of the victim contains the virus. The blood, lymph, lymphatic glands, liver, spleen and urine, are free from the germ.

Nocara and Roux proved the virulence of the saliva of infected cases, three days before the development of the disease, i.e., before the symptoms set in.

PATHOLOGY

Once infection has taken place, the virus attacks the nervous system. Pasteur, Galtier, Cumberland and Roux have proved this. Inoculation with brain fragments, bulb, spinal cord, and cerebrospinal fluid, is certainly followed by rabies. Portions from the bulb are the most virulent of all. Inoculation from the bulb under the dura is followed by the disease in twelve to fifteen days. The virus travels exclusively along the nerve paths. Experiments by different authorities have shown that the poison principally affects the spinal cord and destroys its nerve cells. The virus may be lodged in the peripheral nerves but this is not constant.

On the whole there are no gross pathological findings; but there are hyperemia and moderate edema of the brain, spinal cord and their membranes. The throat region with the lymphatic glands around and the mucosa of the digestive tract are usually congested; the lungs and kidneys present a general congestive condition. The whole picture shows the presence of an intense irritant in the circulation. The blood is dark; there might be minute hemorrhages and clusters of lymph cells about the blood vessels. The Negri bodies are found in the brain.

SYMPTOMS IN DOGS

Since rabies is primarily a disease of dogs, it is worth while to glance at its course in these animals. Hydrophobia in dogs manifests itself in two forms, the raving and quiet. In the raving variety, there are three stages. In the first stage of prodromata, there is melancholy, which lasts from one to three days; the animal is timorous and has no appetite. The second stage is the irritative or manic state; here the animal is prone to bite and has a peculiar, low howl; it roves about and runs away from habitation; its appetite is perverted and it swallows straw, wood, hair, earth, stones, etc. The third stage is the one where paralysis supervenes; the dog looks lean and wretched. The paralysis is specially pronounced in the hind legs which drag along and in the lower jaw which falls and from which the saliva dribbles. The animal dies on the tenth day from the onset of the disease, at the latest.

The quiet form is similar to the raving in the prodromal and paralytic stages, i.e., it runs its course without the second or irritative stage.

SYMPTOMS IN MAN

The disease has a period of incubation and three stages. The incubation period varies from three to six weeks, but this is not constant, for cases of ten days' duration and others of over a year, have been reported. In the young incubation is generally shorter than in elderly persons. During this period the infected person feels perfectly normal.

First or premonitory stage.—Shortly before the onset of the disease and extending from one to three days some ill defined symptoms; such as indisposition, malaise and anorexia, manifest themselves. There is uneasiness and the sense of dread as if evil was impending. Pain, tenderness, and congestion of the cicatrix of the bite with swollen lymphatics in the neighborhood, manifest themselves. Headache, mental depression, irritability, sleeplessness, great anxiety, and aimless wandering sooner or later declare themselves. Even in this prodromal stage, marked aversion to liquids may be manifest. Hyperesthesia, such as sensitiveness to light and currents of air, soon sets in. The full development of this stage is ushered in by a spasm in deglutition; there is a sense of choking and tightness about the pharynx, with difficulty in speaking and swallowing. The dread of fluids, though there is intense thirst, is due to this condition. The pharyngeal mucous membrane is congested; as a result of this there is an abundant secretion of saliva which is hawked and spat because it could not be swallowed. Oppressive breathing with suffocation may supervene. This stage may last a day or two.

Second stage.—This is the stage of excitement; it is marked by peculiar and characteristic tonic convulsions. The spasm in the muscles of deglutition and respiration becomes tenser and swallowing becomes impossible. The mere suggestion of swallowing may cause a spasm; the slightest agitation or touch suffices to provoke a convulsion; a sensation of impending suffocation is felt. The whole muscular system may participate in these spasms; these convulsions are separated by periods of complete relaxation.

Generally the mental faculties remain unimpaired, though there might be mental terror. Hallucinations occur at intervals and may run into mania. These paroxysms may last from twenty-five to fifty minutes; during these paroxysms dyspnea, restlessness, and excitability dominate the scene. In rare instances food could be swallowed though with great difficulty. This stage may last from thirty to seventy hours. Death may occur here amidst the convulsions from exhaustion and asphyxia.

Third stage.—This is the stage of paralysis; it is brief and may last from two to twenty hours. There is a gradual remission of the severe symptoms; general debility and prostration rapidly increase. The nervous excitability becomes less when respiration becomes freer and when the ability to swallow is

partially recovered; the convulsions become feebler and soon disappear. A condition of rapidly ascending paralysis generally supervenes; symptoms of cardiac and respiratory failure declare themselves. This picture terminates in death.

At the commencement of the disease the pulse is normal but soon begins to grow weaker and more rapid as the disease progresses. There is a rise in the bodily temperature and scanty traces of sugar.

This chronology of symptoms does not necessarily take place in every case, as some symptoms might be exaggerated and others overshadowed.

DIAGNOSIS

Once the symptoms have set in the picture becomes unmistakable, especially when the history of a bite is traced to a rabid animal. The conditions that might be mistaken for hydrophobia are hysterical hydrophobia (hydrophobia imaginaria lyssophobia) and tetanus; rarely lethargic encephalitis. The virus of the latter and rabies leave the system by the saliva as shown by Strauss, Hirschfeld, and Loewe. However, a careful study of the case will eliminate all doubts.

PROGNOSIS

This is generally fatal once the disease has declared itself; but there are a few patients who have recovered.

TREATMENT

The treatment of rabies is purely preventative. No curative medicine has been discovered so far; some maintain that salvarsan is curative in rare instances; however, this has not been proved. Once the disease has set in, the treatment becomes merely palliative. The preventive treatment resolves itself into the local and systemic. The former consists of thorough disinfection, cauterization, and even excision if the patient is seen early enough before absorption has commenced. The systemic treatment was inaugurated by Pasteur, which is done by vaccination with the attenuated virus. A retrospective glance at Pasteur's method might not be out of place.

Pasteur had observed that a few of the dogs experimented upon with rabies became refractory to new infection; from this he conceived the idea of procuring a virus that would not kill the dog but would confer immunity.

He had also noticed that if monkeys were inoculated from dogs, the period of incubation grew longer; again he noticed that if rabbits were inoculated from these monkeys, the incubation period grew less and less until it became fixed at the sixth or seventh day. He proceeded to inoculate with the virus of the minimum strength and progressively inoculated with more virulent material. By this process he was able to procure immunity against the active virus of maximum virulence. In 1884 he made a communication to the Institute on the subject. In 1885, in conjunction with Roux and Cumberland, he announced that they had obtained an attenuated virus by desiccating the spinal cords of rabbits that had died as the result of the inoculation with fixed virus.

Their technic was as follows: The spinal cord of a rabbit dead from rabies, was suspended in a bottle at the bottom of which fragments of caustic potash were placed, and the opening of which was plugged with wadding. Each day of suspension (a drying process) reduced the virulence of the infected cord until on the thirteenth or fourteenth day, the cord lost all its virulence. In immunizing the rabbits experimented with, on the first day they were inoculated with a portion of the cord that had been desiccated for fourteen days; on the second day they were inoculated with a portion of the cord dried for thirteen days; on the third day they inoculated with a portion twelve days old. They continued this process until the animals acquired absolute immunity. Joseph Meister who had been badly bitten by a rabid dog, was the first human being on whom the remedy was tried. He escaped getting the disease. The original course of treatment was ten days only; but it was found that this was insufficient in grave cases. A more intensive course extending from fifteen to twenty-two days was adopted.

The virus of lyssa is of two varieties, namely the street and fixed. The former is found in the animals infected with the natural disease. The virulence of this virus varies and when injected subdurally in rabbits it produces rabies at a variable period of time which ranges from fourteen days and upward. The fixed virus is produced by its passage through a long series of rabbits; in this way the virulence is increased for these animals when they ultimately take the disease after a certain fixed period of incubation. This virus is produced as follows: The bulb of a rabid rabbit is injected into another under the dura. The inoculated rabbit develops the disease in from twelve to fifteen days. As this process is repeated again and again, the incubation period is gradually reduced until it becomes fixed, or stationary on the sixth or seventh day. The incubation period cannot be reduced beyond this period. This crop of virus is called the fixed virus. The ways of inoculation are various. Trephining and introducing the virus under the dura is the modus operandi. Inoculation through the anterior chamber of the eye, is feasible. Inoculation can likewise be effected by injecting the virus subcutaneously. Here the results are less certain. According to Hermann the adipose tissue is not favorable to the absorption of the virus. Fat animals inoculated subcutaneously are less prone to develop rabies than lean ones. The intramuscular inoculation is more effective and certain than the subcutaneous. Persons bitten by rabid animals, are today treated with serum according to Pasteur's method, or with the serum-vaccine treatment.

SERUM TREATMENT

Marie and Remlinger have prepared a serum from vaccinated animals, which neutralizes in vitro the virus of hydrophobia. However, the curative and prophylactic effects of this serum have not given the desired results.

PASTEUR'S TREATMENT

This is done by inoculating with an attenuated vaccine. The virus is prepared by daily injecting rabbits subdurally with the fixed virus. At the death of these rabbits, the spinal cord is removed with aseptic precautions, cut into three parts, and suspended in a bottle plugged with cotton and having caustic potash in the bottom. The cords are kept in

a dark room at a constant temperature of 23° C. Thus a whole series of cords from one to fourteen days old are obtained, giving the various attenuations of the virus from pure virulence to nullity. The bitten person is treated in an antirabic institute where he undergoes the course of inoculations; the injections are usually done intramuscularly in the abdominal wall. The usual dose is a portion of the cord two to three m. m. in length. This is prepared for injection by filtration and suspension in normal saline solution or bouillon; it is in the form of an emulsion.

Downy and Couret advocate the use of the desiccated virus as superior to the classical method of Pasteur. They maintain that the immunity conferred by their method was earlier and greater than that conferred by the Pasteur method; the average length of treatment was from seven to nine days with them.

THE SERUM-VACCINE TREATMENT

In this treatment the vaccine and serum are combined. The mixture of two c. c. of the vaccine emulsion and four c. c. of the serum, is injected into the bitten person. This treatment is repeated for the four consecutive days; from the sixth day on, the vaccine emulsion from the desiccated spine, is used alone. The advocates of this method maintain that it confers immunity in a shorter time than that of Pasteur which requires fifteen days to confer immunity. Remlinger showed that the injection of sixty c. c. of the serum-vaccine into the eye of a sheep three days before the development of the disease, could prevent it.

CARRIERS

The generally recognized rule adopted toward the animal inflicting the bite and the person bitten, may be summed up in the following succinct statement. If the biting animal be caught alive, it is sent to an infirmary for animals where it is observed for about a week by a veterinary surgeon. If at the end of this period the animal shows no symptoms of rabies, it is discharged and the antirabies institute informed of the fact. If, however, the animal develops the disease, the brain and spinal cord are removed and sent to the antirabies institute where inoculations are made from the same and where the Negri bodies are looked for. If the biting animal be found dead, whether from disease or from being killed, its cadaver is sent to an animals' infirmary where the brain and spinal cord are removed and sent to an antirabies institute where they are examined as aforementioned. The bitten person is immediately sent to an antirabies institute to undergo the course of inoculations in case the biting animal is not caught or in case the bite is grave or about the head, face, or neck. If the biting animal has been caught and the bite is not grave and is in distal parts, the course of inoculations may be postponed until the result of the animal's observation is known. In case the findings are negative, whether as the result of the veterinarian's observation or the laboratory examination, the course of inoculations may be discontinued; in case the findings are positive, the course of treatment is carried on.

From the foregoing it is seen that medical authorities presume that every biting animal harboring the virus in its saliva must develop the disease within a week after the bite, that it must die from rabies, and that there are no carriers in this disease.

In medicine the word carrier means a person who harbors the germs of a particular infection without himself manifesting any symptoms of the disease produced by the said germs.

It can be stated in a general way that all infectious diseases have their carriers in one guise or another; hydrophobia is an infectious disease; has it carriers like the other infectious diseases? By deductive analogy one is bound to conclude that it has.

Case.—A boy, F. M., of Italian parentage, aged seven years, died of rabies in one of the hospitals on the twentieth of last September. The corpse had all the external signs of death due to some systemic irritant. On the anterior aspect of the middle of the right shin, there was a cicatrix of a bite wound with signs of recent reaction and congestion. A few days previous to death, the boy was seen by several doctors who all made the diagnosis of rabies. On the nineteenth of the said month he was taken to the hospital, where he died on the twentieth, the hospital confirming the diagnosis of the other doctors.

The father, who is an intelligent man, gives the following history and here lies the interesting point. He said that his son had been bitten by a dog about fifty-one days previously, i. e., about the thirty-first of last July; the boy was taken to the antirabies institute in Cairo, which is a thorough, efficient, and up to date one. Unfortunately, the father ceased to send his son to the said institute, because he saw that the dog was all right and showed no signs of rabies. After twenty-three days from the biting, he again saw the dog, which was in a normal state with no signs of madness; content with this false state of security, he failed to report to the police for action against the dog and sent his son and his daughter to Alexandria (a beach and summer resort of Egypt). On the sixteenth of September the boy asked for a drink and had an attack of revulsion when it was offered him. From then till his death he went through the several stages of hydrophobia.

Attempts without avail have been made since to find the dog. Now if the father's history is true, and there are no reasons to doubt his veracity, the dog that bit his son must have been a carrier, for he had seen it thirty-three days later and it was sound and normal.

Carriers are either convalescents or contacts; the latter term is used here in the widest sense including all sources of infection. Pouder in examining one hundred workers in a town with forty thousand inhabitants, that had been free for seven months from cerebrospinal fever, found thirty-eight per cent. to be carriers of the meningococcus. This shows how long a convalescent or contact may harbor the microbe.

Carriers do not manifest the disease because of their immunity to it. At the start it has been stated that the great majority but not all persons bitten by rabid animals manifest the disease. Persons who acquire immunity go through the fight, so to speak, between the invading germs and the natural defenses of the host; during this struggle the invading germs

exist in the said host; this contention is applicable to other animals than man. Now if a dog is going through such a state, its saliva will likely contain the virus of rabies and consequently is a carrier. If a person is bitten by it, the disease would likely develop in that person. This category includes all contacts.

Recovery from actual rabies has been attested for by Chantemesse, Savern, Roux, Sebell, Veresco, Courmont, and Lesieur; their conclusion is that only ninety-nine and a fraction per cent. of those who acquire the disease succumb to it, i. e., a fraction of one per cent. recover. This means that a dog or other animal may get the disease and recover from it. It is very likely that a man or dog in the convalescent state, harbors the virus of lyssa; hence an animal in that condition is a carrier and may infect others. The United States Public Health Report for 1912, by Stimson, stated that the mortality among those bitten by rabid animals and treated by the attenuated vaccine, is less than eight tenths of one per cent. According to Dr. Viala (1) the mortality among 33,388 persons treated for rabies, was only 0.38 per cent.; according to the last authority 395 persons were treated in the same Institute in 1912 with no mortality.

CONCLUSION

1. From the given facts it is evidently clear that there are carriers of rabies. Hence every biting animal should submit to a longer period of observation that a week; six weeks, the period of maximum incubation, would be better.

2. The biting animal should not be observed only by a veterinarian, but inoculations from its saliva (the medium of the virus of hydrophobia) should be continuously made as long as it is under observation.

3. Since the prophylactic treatment of lyssa is almost one hundred per cent. prevention of the disease's development, every person bitten by a dog should undergo the complete course of treatment.

4. All dogs in the streets and public places should be muzzled.

REFERENCE

1. VIALA: *Annales de l'Institut Pasteur,* Vol. XXVI, p. 653, 1911.

Decholesterinization

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The concept of cholesteremia is of comparatively recent origin. It may be said to have been led up to by the investigation of calculi, not only in cholelithiasis, but in certain other conditions wherein the precipitation of cholesterin with the consequent formation of concretions is the fundamental characteristic. It seems generally accepted now that the primary cause of this morbid process lies in some disorder of hepatic function, the liver being apparently the regulating agent in the metabolism of cholesterin.

Cholesterin is a lipoid which does not contain phosphorus. It is found normally in certain tissues such as the brain, in the fluid of hydrarthrosis, in the contents of ovarian and mesenteric cysts, and to a certain degree in the blood. It may be said here that cholesterin is not, however, the only blood lipoid, for there are others of which the phosphatides, cerebrosides and lecithins are examples. In the normal human individual cholesterin is present in from 1.6 grams to 1.8 grams, while the total lipoids amount to 4.5 to 5 grams. Thus it is seen that cholesterin represents almost a third of the total lipoids.

The cholesterin content of the blood is dependent upon alimentation, since the administration of a diet rich in fat or in cholesterin will increase the lipoids and cholesterin in the blood even to the point of doubling them. In such cases the blood serum is frequently of a thin milky appearance, and this lactescence is one of the signs, though inconstant, of cholesteremia. But while the cholesterin of the body is in part of alimentary origin, it has also an endogenous source. The suprarenal glands produce it in considerable amounts, and during pregnancy the corpus luteum furnishes some. It is probable, furthermore, that the presence of this substance in other glands and tissues may mean a production therein in excessive quantities.

The cholesterin thus formed is dissolved in the blood and circulates therein in a state of colloidal equilibrium. It is increased not only as a result of eating brain tissue and eggs, but in certain physiological states as well (menstruation and pregnancy), and in certain diseased conditions such as arterial hypertension, diabetes, gout, and organic lesions like nephritis. It may be deposited in the connective tissue cells of the skin (xanthelasma), in the periarticular tissues, and in serous membranes. Chauffard and Troisier have shown conclusively the relationship existing between uric acid and cholesterin in gout. Cholesterin likewise is deposited in the eye forming the arcus senilis.

To relieve the body of its excess cholesterin there appear to exist in the blood and tissues ferments which oxidize and otherwise decompose a portion of it, but the larger part is eliminated through the liver, and it is found that the bile, of all animal fluids, is the one that contains the most cholesterin. Every increase in the blood cholesterin is reflected by an almost proportionate increase of this substance in the bile. If present in no more than normal amount it remains in solution or suspension, but when in greater concentration it shows a tendency to precipitate with the formation of calculi; and this tendency becomes more marked when the biliary salts are diminished in the presence of a cholecystitis, or when the gallbladder is invaded by a foreign body—no

matter how minute—which may serve as a centre of crystallization. We see here a tendency in pathological thought to substitute the socalled humoral theory of cholelithiasis for the previously held inflammatory and microbial theories. In general it seems to be true that biliary lithiasis depends in large measure upon the concentration of cholesterin in the bile, and this factor in turn depends upon the degree of cholesteremia present.

But this is not the whole problem. The mechanism of the elimination of cholesterin is fairly complex, and such elimination depends upon the proper functioning of the liver. The liver receives much more cholesterin than is eliminated in the bile, and the excess is metabolized (perhaps as a phase of the production of the biliary salts) by the liver. Hepatic insufficiency may, therefore, play a very considerable part in permitting an excess of cholesterin in the bile. Again, there must be considered the permeability of the biliary channels. Obstruction of these may bring about a retention of cholesterin in the blood, just as ureteral stenosis may result in an increase in the blood urea. From this it is easily understood why the blood shows an excess of cholesterin during an attack of jaundice. Hepatic insufficiency would seem then to be always the focal point of attack in the treatment of any disorder of cholesterin metabolism.

The therapeutic indications are three: To reduce the amount of cholesterin in the circulating blood, to overcome hepatic insufficiency, and to facilitate the elimination of cholesterin in the bile. In addition to dietary restrictions involving foodstuffs rich in cholesterin, other measures whose efficacy has been recently brought to light are interesting. The sugars, especially glucose and lactose, serve as active decholesterinizing agents. The rectal instillation of glucose in isotonic solution is the best method of administration. Ingestion by mouth is much less efficient, while subcutaneous injection secures very little benefit. Sodium benzoate and sodium salicylate given in daily doses of one gram over a period of four or five days will diminish the amount of cholesterin in the blood very measurably. Other salts of sodium may produce analogous effects. Uroformine, which exerts a tonic effect upon the gallbladder, may be combined with the sodium salts referred to. In connection with the physiology of the liver it is important to note that antipyrine definitely diminishes hepatic activity. Experimentally it has been shown that it lowers the amylase of the liver as well as interfering with the secretion of bile and the nitrogenous coefficient. In diabetes one gram of antipyrine has been observed to increase the bile cholesterin by approximately twenty-five per cent. The use of this drug should therefore be carefully controlled in individuals whose blood content of cholesterin is above normal.

So important is the whole question of cholesterin metabolism that it merits and will undoubtedly receive much more extensive and intensive study in the future than has been given it in the past.

Allergic High Blood Pressure and Its Control by Epinephrin*

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Arterial hypotension to a rather marked degree seems to be the common finding in the severe chronic perennial asthmatic emphysematous bronchitis of many years' duration. Systolic readings of between 90 and 100 in the adult, are not at all unusual in cases of this type. However, an elevation of the usual blood pressure readings ordinarily accompanies the actual asthmatic paroxysm, falling again in the intervals between attacks.

Whether it is possible for an unusually high blood pressure to be instituted gradually and maintained by frequently recurring daily asthmatic attacks *per se*, —the hypertension thus becoming allergic in origin and character,—is a question difficult to answer, owing to the obvious nonexistence of known blood pressure findings anteceding the chronic asthmatic state. Also, whether it is possible for certain toxins of an antigenic character to produce coincidently immediate high blood pressure and asthma, is another question that can not be definitely replied to. The following cases, however, suggest the decided possibility that certain of these chronic high blood pressure cases accompanied by bronchitis or asthma may be totally or partially of allergic origin. The recognition of this fact is important, owing to the question that must at times arise, of the safety or advisability of the administration of epinephrin in cases of asthma presenting an elevated blood pressure, where the employment of this agent might apparently be considered positively contraindicated.

Naturally, in this connection, the myocardial dyspnea so frequently accompanying high blood pressure with beginning or advanced cardiac decompensation must be differentiated and ruled out,—and does not enter into this discussion.

The following cases exemplify the condition desired to be brought out.

CASE I.—Mrs. F. C., widow, aged fifty-seven, was first seen February 3, 1922. For several years she had suffered with winter bronchitis. Her first attack of asthma came on five years previously. The present attack of asthma started in Illinois in April, 1921, and had been almost continuous for ten months in spite of several changes in climate. She had been two or three weeks in San Antonio, desperately ill during the entire period. On admission to Santa Rosa Infirmary on February 1st, she had

*Read before American Allergy Association. Chicago, June 10, 1924.

been considered a probable wool feather animal hair type of asthma, and had been placed in a stripped room, and such contact absolutely eliminated. Similar attention was given to the eradication of all nonspecific mechanical irritants. Catharsis had been induced, and the patient had been too ill to take nourishment of any kind, thus eliminating etiological dietary factors.

The treatment the previous three days had consisted of epinephrin, twelve minims, with one eighth grain of morphine and one one hundred and fiftieth grain of atropine every four hours,—without the slightest benefit.

Examination revealed a woman in poor condition, suffering intensely from bronchial asthma with the usual chest findings typical of this condition. Heart normal, abdomen and extremities negative. Systolic blood pressure varied from 180 to 200, diastolic 120. The Wassermann was negative. An x ray of the chest was negative. The urine was loaded with albumin and casts.

The treatment was not changed, but during the next three days, an intensive search for antigenic factors was carefully made. Intradermal tests revealed several animal hair strong positives, including feathers,—but these had all been eliminated. Pollen tests were negative. As the patient for days had taken no food, dietary etiology seemed improbable. The question then arose as to the possibility of drugs constituting the immediate etiological factors. Intense positive skin reactions were secured to morphine and atropine, especially to morphine. Both were at once omitted, on Fberuary 5th, and codeine substituted. That night the asthma was extreme, and when seen early the next morning, the patient's condition was desperate. She was markedly delirious, with frequent attacks of vomiting and diarrhea, and asthma intense, as it had been for hours. The systolic blood pressure was 200. Intracutaneous tests were then made for codeine and heroine and found intensely positive, far more so than the usual positive reactions ordinarily secured with these substances in nonallergic individuals. The patient's condition precluded testing with graduated dilutions of these substances. It had been learned the day previous, that for some years past, she had been taking daily a well known codeine cough syrup for her bronchitis. This was of course stopped and all narcotic medication ordered withdrawn. On account of the urgent condition of the patient, almost exhausted from the extreme asthma, calling for immediate relief, and narcotics being unavailable, in view of the previous failure of epinephrin in twelve minim doses, it was decided advisable even if risky in the absence of any precedent to go by, to increase the epinephrin. As a last desperate resource, twenty-five minims of the drug in a single dose was slowly given. Almost complete relief immediately followed, the patient securing several hours of rest, the first for days. Blood pressure within a few moments fell to 170. By noon of the same day, relief was practically complete and the blood pressure had fallen to 140, where it remained. Epinephrin was continued in ten minim doses three times a day thereafter for three days, and then dropped to seven minims also three times a day. The patient was allowed out of bed only five days after the heavy dose of epinephrin, with both asthma and bronchitis gone, leaving the hospital in another three days. Albumin and casts disappeared from the urine a day or two after the cessation of the asthma, and remained absent. The immediate relief of both asthma and high blood pressure in this case following promptly a dangerously high dose of epinephrin was decidedly startling, as it was totally unexpected, and all sorts of trouble had been looked forward to.

Case II.—R. C., male, aged sixty-nine, single, a stockyard inspector for forty-five years, was first seen at Santa Rosa Infirmary on May 7, 1923. One year previously, he had been compelled to give up hard work on account of shortness of breath on exertion. He had been examined in Chicago and found markedly arteriosclerotic, with a systolic blood pressure varying from 200 to 260. His first attack of asthma was in December, 1922. He then spent one month each at the Mercy Hospital, Chicago, and at Mt. Clemens, without much relief. In the early spring of 1923, he had eight severe attacks of asthma. When first seen by me, he had been one month in the hospital in San Antonio, with constant unbroken bronchial asthma, and several severe intercurrent attacks. At the time of my first examination he was in a moderately severe attack which had lasted three or four days.

Examination revealed a person rather worn out and decidedly uncomfortable. Peripheral arteries were markedly palpable. the extremities, abdomen and reflexes were normal. Lungs showed the usual bronchial asthma findings. The heart was markedly enlarged with an accentuated second aortic sound and a loud diastolic murmur. The Wassermann was three plus. Previous urine examinations occasionally showed albumen and casts. The systolic pressure was 240.

While the general arteriosclerosis was obvious, the question of allergy arose. Skin tests at the time were impractical, as the patient demanded immediate relief. From his history and occupation, an animal hair type of asthma was suspected, so for a test, a heavy camel hair undershirt was held over his face while the heart examination was being repeated. Within a few moments, the asthma became extreme, the blood pressure rising to 260, and the patient's condition became critical.

The hospital room was at once stripped of feathers, wool, etc., in the usual manner. The patient years past had been a narcotic addict, and insisted that no drugs of that character be used. In view of the obviously extreme arteriosclerosis and high blood pressure epinephrin certainly seemed contraindicated. Remembering, however, the satisfactory experience with Case I, I decided to take another desperate chance. For two and one half hours, fifteen minims of the drug was given every fifteen minutes for four doses and then every half hour for two doses. At the end of that time considerable relief had been secured, the blood pressure dropping to 175. Four hours later, the dose was repeated with almost complete relief, the pressure falling to 170. Two days later, asthma returned, yielding to seven minim doses given every fifteen to thirty minutes for three hours.

For the next two weeks, small doses of epinephrin were given from three to four times a day, the patient doing splendidly in every way, the systolic pressure varying from 148 to 155. Epinephrin was then stopped, and iodide of potash was started in three grain doses every three hours. Several days of this treatment brought back some respiratory distress, causing the withdrawal of this drug and the resumption of epinephrin in five or six minim doses.

On May 26th he showed a mass of protruding hemorrhoids interfering with micturition. On June 3rd, a small area of gangrene was noticed in this mass, and hemorrhoidectomy was done under morphine and local anesthesia by Dr. L. M. Weinfield (cautery method). The operation was apparently well borne, and the rectum healed kindly. Hematuria, however, followed at once, with restlessness and drowsiness alternating for several days, attended by albuminuria and casts.

Iodide of potash in four grain doses was started again, and, as a result, extreme asthma suddenly returned on June 8th. Epinephrin had to be used in fifteen minim doses every hour for twenty-four hours before anything like relief could be obtained. Blood pressure again fell from 240 to 150 with relief from the attacks. The asthma then ceased, and did not return, permitting permanent withdrawal of epinephrin. The last attacks left the patient extremely exhausted. Edema of the ankles and shins commenced and persisted, along with marked dyspnea on the slightest exertion. The cardiac condition remained unchanged. Pulse rate, 80 to 100, regular. The systolic pressure remained around 145 to 150. A day or two later he became irrational. The mental condition grew rapidly worse, becoming maniacal about June 16th. While no evidence of asthma could be detected, the patient showed every evidence of renal breakdown, dying June 19, 1923. Autopsy was not permitted.

This case is reported merely as showing the influence of epinephrin on allergic high blood pressure, on not one, but consistently on several occasions, when invariably the relief to the asthma following the administration of the drug was accompanied by a marked fall in the pressure. While it is granted that there existed also in this case sufficient cardiovascular and renal disease to produce hypertension independent of allergy, the relief from the asthma and the coincident reduction of the blood pressure following epinephrin administration, makes for a decidedly probable connection between the two. I regret, of course, the necessity of an intercurrent surgical operation on a patient of this kind. Also the doses of epinephrin while apparently excessive, actually were no larger than was absolutely necessary to secure relief. Administration was very slow and stopped at once with the first signs of the abeyance of the asthma. Probably, antispecific treatment was also indicated.

Recently, in a third case of winter asthma of fifteen years' duration, in a woman of sixty-four, with a systolic pressure of 170, following the relief of her asthma by the removal of wool and feathers, her offending antigens, and the regular administration of epinephrine for a few days, the blood pressure fell at once to 150. It has for the last three months remained at 138, during which time, while undergoing immunization, there has been complete freedom from asthma, cough, and bronchitis.

In a fourth case, in a woman of sixty-one, complicated by a hemiplegia six months previously, a chronic asthma of many years' duration, whose antigenic factors were various danders, pollens and foods, and whose systolic pressure varied from 175 to 190—when first seen November 23, 1923,—removal of antigens, and the employment two or three times daily of epinephrin in three or four minim doses which cleared up the asthma, resulted within ten days in a fall in the blood pressure to 150, where it remained during the several weeks that the patient remained under observation.

However, the idea is not suggested that all hypertension accompanying bronchial asthma is necessarily invariably antigenic in origin. I have in my records one chronic perennial case, in a woman of sixty-four,—also of the combined animal dander and pollen type, with an original systolic pressure of 210,—in which the patient was relieved of her asthma and later successfully immunized in the usual manner. Her blood pressure, months later, is still 210.

CONCLUSIONS

Our knowledge of the causes of hypertension is far from complete.

Where this condition exists in connection with asthma or chronic bronchitis, certainly the question of allergy should be gone into. Immediate marked reduction of the high blood pressure coincident with the relief of the asthma following epinephrin administration suggests that cases of this type are totally or partially allergic in origin.

Also, apparently, from these few cases, high blood pressure in asthma is no bar to the use of epinephrin in even decidedly large doses.

Moore Building.

Report of Three Autopsies Following Carbon Tetrachloride Treatment.—J. F. Docherty and Lucius Nicholls (*British Medical Journal,* October 27, 1923) report their necropsy findings in three cases treated with carbon tetrachloride. A dose of four c. c. of carbon tetrachloride was given and it was found that fatty degeneration of the liver might be produced thereby. Although numerous fat globules may appear in the liver cells, the changes in the liver are of a temporary nature and do not appear to contraindicate the use of the drug, because many patients have been treated with much larger doses and have not complained of any discomfort other than very slight giddiness, nor have symptoms or signs of ill health arisen in them. Further, many hundreds of school children have received doses of carbon tetrachloride, and in no case has any sign of ill health occurred subsequent to treatment. In one case the changes in the liver were so marked that the signs of marked ill health during life were expected, but these were absent; consequently it appears that much fat (presumably derived from fatty degeneration) may appear in the liver and yet be a matter of small importance as concerns the health of the patient.

Practical Therapeutics

IODINE IN THE TREATMENT OF HYPERTHYROIDISM

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The therapeutic advances of the last two years (1, 2) have shown iodine to have an important place in the treatment of certain types of hyperthyroidism, as well as in the prophylaxis of colloid goitre.

TYPES OF GOITRE

All types of goitre as ordinarily met are easily recognized by remembering the simple physical findings in the thyroid gland in goitrous individuals. There are three types of findings: 1, the smooth soft enlargement; 2, the smooth hard enlargement, and 3, the knotty hard or soft enlargement. Translated into terms of pathology the first type is called colloid goitre; the second type, exophthalmic goitre, and the third type, multiple adenomata with or without colloid, on which depends the consistency of the goitre. It is to be remembered that the last two types of goitre may occur in the same individual, and one or both may be active. This latter point is particularly useful in the selection of cases for treatment with iodine, as it is inadvisable so far as available information is concerned to administer iodine to a patient with hyperthyroidism due to multiple adenomata. This was clearly demonstrated in one of my patients suffering from multiple adenomata of the thyroid with hyperthyroidism, and in another with multiple adenomata and exophthalmic goitre.

INDICATIONS FOR IODINE THERAPY

Iodine may be with safety administered in all simple cases of colloid goitre. It may be given to any patient with exophthalmic goitre, but not to patients who have multiple adenomata with or without hyperthyroidism, for in the former the hyperthyroidism may be increased, and in the latter may be excited.

The form of iodine most frequently used in the treatment of hyperthyroidism of exophthalmic goitre is Lugol's solution, Liquor Iodi Compositus, U. S. P., but there is evidence to support the statement that any type of free iodine might be used (2).

ILLUSTRATIVE CASES

Case I.—Mrs. C. W. H., aged forty-five years, first came under observation on June 5, 1923. The essentials in her history were rapid heart action, nervousness, scanty menstruation for six months, weakness in the thigh muscles, gradual loss of weight with large appetite; sleeplessness; sense of warmth day and night; irritability, and fatigue on slight exertion. The pulse was rarely under 120. There was definite bilateral exophthalmos, a fine tremor of the hands, and a red tongue with many fine fissures. The thyroid was symmetrically enlarged with a palpable thrill, and audible bruits at all four poles. Each lobe measured four by two cm. The blood pressure was 160 systolic and 90 diastolic. The general physical examination was negative. The basal metabolic rate was plus sixty-five per cent.

The patient was put to bed, quietness maintained, ice bags placed over the heart and neck, and digitalis administered in fairly large doses. After a week the metabolic rate was plus sixty-five per cent. and there was no clinical improvement. The patient had had a previous rest treatment without any benefit. The patient was given after the last rest period one c. c. of Lugol's solution in a glass of milk three times a day. In two days she was positive that she felt better, and at the end of a week the pulse rate varied from 72 to 80 a minute when the patient was quiet in bed, and the metabolic rate had dropped to plus thirty-nine per cent. The dose was then reduced to 0.5 c. c. three times a day, and at the end of the second week there was some decrease in the size of the gland, and the eye signs were less definite. The metabolic rate was plus nineteen per cent. The patient was allowed up, after which the pulse ranged about 90 a minute. She was taken off iodine several times by her physician, but always the hyperthyroidism became more marked at the end of a week to ten days, and she would be relieved by going back to the iodine.

After several months of this treatment, the patient had a partial thyroidectomy, which had been preceded by a bilateral ligation of the superior thyroid arteries, from which no benefit was obtained. Following the thyroidectomy, the symptoms of hyperthyroidism were in abeyance for a few weeks, and then returned. The patient has continued to take almost constantly three or four drops of Lugol's solution three times a day, as it is the only way that she can be comfortable. Without it her metabolic rate goes up, and with it the rate comes down. Lugol's solution has been of distinct advantage to this patient, who had clinically and pathologically a true exophthalmic goitre.

The type of patient to whom Lugol's solution should not be administered, although an exophthalmic goitre is present, is illustrated in the following case:

Case II.—Mrs. V. K., aged thirty-six years, first came under observation on January 15, 1924, because of nervousness, rapid heart action, and prominence of the eyes. She had menstruated irregularly for several months. About five months before coming under observation she began to lose weight, although she had a large appetite, and her heart action was rapid. She became weak in the thigh muscles, and found going upstairs difficult. She was irritable and could not stand any noise. She perspired freely and felt very warm. At the time of examination there was decided exophthalmos in both eyes. The pulse was 130 a minute, and the blood pressure was 140 systolic and 70 diastolic. The thyroid was large, smooth and hard, with bruits at both upper poles and over the body of the gland. The lobes were three by two and a half cm., and the isthmus measured one by one cm. The heart beats were 150 a minute, and the muscle tones were faint. There was slight edema of the legs. The metabolic rate was plus 55 per cent. There were some small

nodules in both lobes of the thyroid. This patient was placed on one c. c. of Lugol's solution three times a day. In a few days she noticed that she was more nervous, the heart more rapid, and at the end of a week she was prostrated from weakness, the skin itched intensely, and during the last three days of the week she vomited frequently. The metabolic rate was plus 65 per cent. The Lugol's solution was discontinued, and her general condition returned in twelve days to its previous state. This patient was relieved of all her symptoms by a partial thyroidectomy, and the gland showed multiple adenomata in the presence of exophthalmic goitre.

The ill results of giving Lugol's solution to a patient with hyperthyroidism due to multiple adenomata is shown in the following case:

Case III.—L. B., female, aged fifty-three years, was first seen on January 12, 1924, because of nervousness. She had been sick for over a year with rapid heart action, weakness, nervousness, restlessness, and gradual loss of weight. At the time of the examination multiple adenomata were present in both lobes of the thyroid, which measured on the right five by three cm., and on the left two and a half by three cm. The blood pressure, which was probably affected by other factors, ranged from 200 to 140 systolic, and 120 to 100 diastolic. The metabolic rate was plus 25 per cent. After two weeks rest in bed the metabolic rate was plus 15 per cent. The pulse was less frequent, and the nervousness had decreased. Lugol's solution was then given in one c. c. doses three times each day, and at the end of five days the patient was worse than at any time since she had been ill, and the metabolic rate was plus 30 per cent. The Lugol's solution was discontinued, and in two weeks the patient had regained her former state of health. The gland removed by partial thyroidectomy showed multiple adenomata.

COMMENT

Although striking improvement is shown in many cases of exophthalmic goitre by the administration of Lugol's solution, there is probably no cure in the treatment. The patients, however, all stand operations much better by a preliminary reduction of the state of hyperactivity by the treatment. The danger of exciting a greater degree of hyperthyroidism in patients by the use of Lugol's solution necessitates a certain nicety in the clinical examinations that must supersede a diagnosis based purely on metabolic studies. I have used Lugol's solution in the treatment of a number of my patients with exophthalmic goitre, and in all there was some improvement, while in eighty-five per cent. the improvement was striking. It is a valuable addition to our therapeutic armamentarium in the treatment of this type of goitre, but apparently should not be given to the adenomatous subjects.

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BISMUTH IN THE TREATMENT OF SYPHILIS*

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(*Concluded from page* 550)

ACTIVE TERTIARY SYPHILIS

Case XXXIII.—M. S., No. 22568, male, aged fifty-seven, furniture mover, married, was admitted to the Cornell Clinic November 3, 1921, with spondylitis, arthritis deformans and a four plus Wassermann. Course of six salvarsan and fifteen mercury injections. Wassermann, May 5, 1922, still four plus. Second course of twelve salvarsan and eight mercury injections. Wassermann, August 8, 1922, four plus. Course of ten neotrepol injections which had to be discontinued because of severe stomatitis. Wassermann still four plus.

Comment.—Serology showed no improvement after sixteen arsenic and twenty-seven mercury injections. No conclusions can be drawn about the possible effect which bismuth may have had on the serology, since these treatments had to be discontinued on account of stomatitis.

Case XXXIV.—E. F., No. 17603, female, aged thirty-four, married, admitted to the Cornell Clinic on September 18, 1922, with large tuberoserpiginous, ulcerated syphiloderms, covering the left cheek, auricles and part of the scalp. Had received potassium iodide when first infected, and six months prior to admission had received six injections of mercury. Wassermann, September 18, 1922, four plus. Course of twelve neotrepol injections. Wassermann, October 20, 1922, still four plus, but there was marked improvement in the lesions, which became almost completely healed. Second course of neotrepol injections. Wassermann, December 24, 1922, still four plus. A third course of neotrepol was given. Skin lesions had completely healed and only the scars remained. A fourth course of neotrepol injections resulted in a two plus Wassermann reaction. The patient discontinued treatment.

Comment.—In view of the favorable result obtained in the disappearance of the lesions after the use of bismuth and the final reduction of the Wassermann test to two plus, we feel that this case shows definitely the benefits derived from bismuth in the active tertiary stage of the disease.

Case XXXVIII.—A. R., No. 22489, male, aged thirty-two, unmarried, elevator operator, admitted to the Cornell Clinic September 20, 1921, complaining of gumma of the left testicle. Had chancre in 1917. Wassermann, September 20, 1921, three plus. Twenty-one arsenic and thirty-five mercury injections given. Clinical symptoms cleared up. Wassermann, still four plus. Twenty neotrepol injections. Wassermann, November 21, 1922, two plus. Twelve neotrepol injections. Wassermann, negative. Third course of neotrepol injections. Wassermann, January 15, 1924, one plus.

Comment.—In this case the bismuth had a decided effect upon the Wassermann reaction, reducing it from a four plus to a final one plus.

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SYPHILIS OF THE NERVOUS SYSTEM

CASE XLI.—L. M., No. 5283, aged fifty-two, male, unmarried, bookkeeper, admitted to the Cornell Clinic on January 6, 1922, complaining of deafness, Examination revealed cerebrospinal syphilis with involvement of the auditory nerve and a three plus Wassermann. Course of six salvarsan and twelve mercury injections. Wassermann became negative. Spinal fluid examination, August 22, 1922, showed cell count of 20, strongly positive globulin test, colloidal gold curve of 3344333200, Wassermann two plus. Course of sixteen salvarsan and twenty-two mercury injections. Blood Wassermann, January 2, 1923, three plus. Twelve mercury injections. Wassermann became negative again. First course of thirteen neotrepol injections. Wassermann negative. Spinal fluid showed decided improvement, in that the globulin test showed only a very slight reaction, cell count was only 7, colloidal gold test 0122342000 and Wassermann test three plus. Second course of twelve neotrepol injections. Wassermann, October 23, 1923, negative. Third course of neotrepol injections. Wassermann still negative.

Comment.—This case shows the benefits derived from bismuth in a case of syphilis of the nervous system, where subsequent to neotrepol injections, the Wassermann became negative and the spinal fluid reacted less markedly.

CASE XLII.—G. T., No. 7713, male, aged forty-four, married, waiter, admitted to the Cornell Clinic February 14, 1922, complaining of failing vision. Had previously received six salvarsan and six mercury injections. Showed on admission beginning atrophy of the optic nerve. Wassermann, February 14, 1922, four plus. Received thirteen salvarsan and eighteen mercury injections. Wassermann, January 31, 1923, three plus. Course of twelve neotrepol injections. Wassermann April 11, 1923, two plus. Course of six salvarsan and twelve mercury given after neotrepol injections because of stomatitis. Reaction after that was plus-minus.

Comment.—In this case the neotrepol seemed to aid in reducing the Wassermann reaction, but patient had to discontinue bismuth therapy because of stomatitis.

CASE XLIV.—S. O., No. 18306, female, aged fifty-nine, widow, moving picture actress, admitted to the Cornell Clinic August 15, 1922, complaining of pain and stiffness in legs and lower part of back, and stomach trouble. Had taken pills thirty years ago. Examination showed irregular pupils. Blood Wassermann August 21, 1922, four plus. First course of eight salvarsan and thirteen mercury. Wassermann, December 18, 1922, four plus. Second course of four salvarsan and twelve mercury injections. Wassermann, April 16, 1923, one plus. Third course of six salvarsan and ten mercury injections. Wassermann, September 8, 1923, one plus. First course of neotrepol injections. Wassermann negative, November 5, 1923.

Comment.—Four plus Wassermann was reduced to one plus after eighteen salvarsan and thirty-five mercury injections and remained one plus. After twelve neotrepol injections, however, the Wassermann was reduced to negative and all clinical symptoms disappeared, showing the advantage of having used bismuth in this case where the Wassermann reaction yielded at first to salvarsan but finally remained fast at one plus, until through bismuth therapy it became negative.

CONCLUSIONS

As a result of our observations for a period of over two years in the use of bismuth in antisyphilitic therapy, and with our opinions crystallized by the facts contained in the presentation of these cases[1] as well as from a study of numerous other dispensary and private cases, we must conclude that bismuth is a valuable drug to be employed against syphilitic infection.

This drug is of particular value in combating the spirochetal invasion when there is unusual resistance to the action of or intolerance of other drugs. Bismuth may be employed independently, or combined with arsenic or mercury, or arsenic and mercury. It seems to have less spirocheticidal power than arsenic but more than mercury. Its administration does not seem to interfere with the natural immunological powers of the body and in this respect it is extremely valuable.

Our observations in primary syphlis prove that bismuth destroys the spirochetes in the chancre, causes cicatrisation of the lesion quickly, brings about a disappearance of the adenitis, and affects the serology favorably. Its use may abort syphilis, but it is not as reliable as salvarsan for this purpose.

In secondary syphilis bismuth therapy causes the disappearance of the local and general manifestations and reduces the Wassermann reaction. It does these more quickly and efficiently than mercury and there is less possibility of the development of a Herxheimer reaction or a neurorecidive as when arsenotherapy is employed. It has been used in the presence of jaundice caused either by the disease or by arsenic with success and without producing harm.

This drug is also of value in latent and active tertiary syphilis, neurosyphilis and congenital syphilis, but its action is slower in such cases than in the earlier phases. However, in neurosyphilis it has been noticed that there is an absence of signs of irritation as from arsenic and that there may be decided subjective improvement when there are no apparent objective, clinical or serological changes.

Bismuth has proved of special importance for patients with arsenical dermatitis, in Wassermann fast cases, and in obstinate or recurrent cases.

The disadvantages of bismuth are few. These are occasional and slight pain, the rare formation of a black line on the gums and hypertrophy with black pigmentation of the papillae on the dorsum of the tongue. Some kidney irritation and cases of stomatitis were encountered, but these were comparatively rare.

It is obvious that bismuth constitutes another active antisyphilitic weapon in the armamentarium of drugs for the treatment of syphilis in all stages. In view of our conclusions, based on the facts presented, we feel that it must be accepted as a valuable adjunct in the treatment of syphilis.

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Phosphorus Therapy.—At one time phosphorus played a very important part in medicine, but of late years it would seem not to have received due recognition, taking into consideration its usefulness in therapeutics. It is perhaps in the laboratory that most attention has been paid to it, and this can be understood, since numerous investigations in connection with phosphorus have explained various physiological and, indeed, pathological processes. And today, especially among the younger school, research in biological laboratories in connection with phosphorus seems to attract many investigators. Its disuse in medicine may be due to some extent to the fact that phosphorus, when administered as such, may readily give rise to toxic symptoms. On the other hand, the hypophosphites, from the exhibition of which so much was expected at one time, have partly lost their high place as therapeutic agents, and it is now generally held that they have little, if any, influence on nutrition, which fact can be readily understood when it is considered that practically the whole quantity of hypophosphites administered can be recovered from the urine in an unchanged condition. Later, the glycerophosphates held a high place, but they, too, have scarcely maintained their position in therapeutics.

Consequently, it is a matter of interest to come across a preparation of phosphorus in organic combination which presents the drug in a nontoxic and readily assimilable form. Phytin, a double salt of calcium and magnesium with inositol hexaphosphoric acid, has been shown (*Lancet*, July 8, 1922) to contain at least twenty-two per cent. of phosphorus. As its name indicates, phytin is obtained from plant seeds, and it is interesting to note in this connection that Posternak, of Geneva, has demonstrated that inosite phosphoric acid, prepared synthetically, is identical with the phosphoorganic material of green plants. Although the preparation was introduced twenty years ago, when its therapeutic uses were described by Prof. A. Gilbert and Dr. A. Lippmann, (*La Presse médicale*, No. 73, 1904) it does not appear to be generally known. The need of phosphorus in many conditions is very great, on account of excessive loss, or by reason of defective nutrition. In the opinion of Manquat (*Treatise of Therapeutics*, vol. ii, 1912) it is the most assimilable of all phosphorus combinations, and it has been shown by the French observers to act as a powerful stimulant of nutritive metabolism. Clinically, this action is manifested by a pronounced increase of appetite after a few days' treatment. Combined with quinine in the form of quinine-phytin, which contains fifty-eight per cent. of quinine, phytin not only counteracts the depressing effect of quinine, but enhances the specific action of this alkaloid. Quinine-phytin would, therefore, appear to be particularly useful in malaria.

Thorium Emanation in the Treatment of Chronic Leucemias. — Cluzet and Chevallier (*Bulletin de l'Académie de médecine*, May 13, 1924) administered by inhalation thorium emanation from the radiothorium contained in the sediment of the Echaillon spring water. An apparatus was constructed enabling the patients to inhale air passed through a thin layer of powder containing radiothorium and absorb a definite amount of the emanation. The average amount of emanation taken in a minute corresponded to 0.6 electrostatic unit. The duration of each course of treatment was fifteen to twenty days, the patient inhaling the emanation for two or three hours daily in divided periods of one half hour. Rest periods of at least one month should intervene between successive courses of treatment. In two cases of lymphatic leucemia the emanation alone proved capable of increasing the number of erythrocytes, reducing the leucocytes, and causing a striking improvement in the general condition and reduction of the glandular masses. In three cases of myeloid leucemia the fever subsided as a result of the treatment and there were the same effects on the red and white cells as in the lymphatic cases. The action of the emanation in reducing the leucocytes seemed to be less marked than that of the x rays, but the action in increasing the red cells was more marked. Combination of the x ray and thorium emanation treatments is advised.

Surgical Treatment of Intermittent Claudication (Operation of Leriche).—Hermann Schlesinger (*Wiener klinische Wochenschrift*, March 27, 1924) recommends Leriche's pariarterial sympathectomy for severe cases of ulcers on the lower extremities or in intermittent claudication due to angiospasm. In seven of his cases the results were favorable and in two cases a secondary amputation was necessary. The failures show that careful after-treatment for several months is absolutely necessary and that the extremity must be carefully protected from the effect of cold. The favorable cases show an improved circulation and a relief from pain a few days after the operation. Internal therapy is necessary as an adjuvant. Amputation may be avoided in this way. In addition to the use of sodium nitrite, the author recommends injections of the following solution: scopolamine hydrobromide 0.00025, dionin 0.03, morphine hydrochloride 0.02, in distilled water 1 c. c. for the pains occurring after the operation.

Historical Medicine

Galen's Commentaries on Kidney Disease

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We have seen ample evidence how pernicious was the prohibition formulated in the Hippocratic Oath which prevented Hippocratic surgeons from cutting for stone and that it had long been an interdict of ethics for them if not a law of the state. Just how this came about I have never been able to discover. It was but the prelude of all surgery passing over into the hands of the barbers. However, in the time of Hippocrates there is every evidence the surgeon, probably undifferentiated from the physician, used the knife boldly in other kidney disease, though even in Homer there seems a beginning specialization in the two sons of Aesculapius, who went to the Trojan war. However that may be, we have reason to believe, I think, that general surgery was in the same hands as pills and plasters in the time of Hippocrates. His were not the people and his was not the age when they dwelt in monster cities.

Specialization was impossible in the towns and the countrysides of Greece, the Asiatic littoral and the isles of the Aegean. When, however, in the lapse of ages and the shifting of civilizations we meet Galen, the denizen of a mighty city and the citizen of a mighty empire, crowded with people dwelling in the most profound peace the world had ever seen, though working out a destiny of disaster, we find here as in Egypt of old with its teeming cities the division of medicine and probably of other arts into many specialties. Galen not only did not cut for stone, he did not cut for kidney abscess, he did not practise ophthalmology when he lived in Rome out of fear for the hostility of the ophthalmologists, but back in Bithynia he had written a book on eye diseases and practised surgery on the gladiators. In Rome, besides being a physiologist and anatomist, he was what we would call a practitioner of internal medicine (1).

Most of the kidney disease recognizable in his day, being of a surgical nature and calling for surgical therapy, there is no discussion of this aspect of it at all. He deals with its etiology, symptoms and pathology, but as for its cure there is little to be found except multitudinous prescriptions for dissolving stone in bladder or kidney and the regimen for avoiding its formation and for moderating the pains of acute attacks. We find, however, in him, as in many of us today confronted by the same conditions, an appreciation of the evils of specialization unavoidable as they seem to be at certain stages of civilization. In a commentary (2) on that part of the Cnidian Sentences which he found in the Hippocratic Regimen in Acute Disease which declares there are seven diseases of the bile, twelve of the bladder and four of the kidney, he says the authors of such opinions have written more than they have any call to do—such things being indeterminate and vague. He felt very evidently, too, that the dividing line between surgery and its specialties and the art of medicine was also vague and indeterminate, however careful he was not to encroach at Rome on the former. Back of them all lie certain systemic physiological tendencies and pathological defects his philosophy taught as clearly as ours teaches us and these certainly are vague and indeterminate. He knew how varied is the biology of man—what is one man's food is another man's poison. In his book on Hygiene (3) he says:

"I once knew a certain old farmer, more than a hundred years old, living in the country, most of whose nourishment was goat's milk, sometimes taken alone, sometimes pieces of bread soaked in it. Sometimes he mixed honey with it and sometimes pieces of thyme with the bread. Another man, who thought the reason for the old fellow's long years was the milk, suffered injury when he tried it. The pit of the stomach was oppressed and the right hypochondrium was distended. A certain other man having attempted to make use of the milk likewise, although he did not suffer at all (for he boiled the milk) from heart burn or fatty eructation, nor from a weight in the hypochondrium, in a week from the beginning he said he felt distinctly a heaviness of the liver. It seemed to him something was lodged in the right hypochondrium like a stone as there was a dragging feeling extending as far up as the collar bone. It was very evident therefore that the liver was obstructed in this case and that flatulence was present in the other. Besides I knew that after using milk for a long time stones had formed in the kidney. There was another man had injured and lost all his teeth. Many other things have resulted from the use of milk."

Here as elsewhere he emphasizes the occasional, if not the frequent, bad effects of milk in the diet and its tendency to obstruct the liver and form kidney stone, though he makes concession to goat's milk, this being thinner, but anything thick, like milk or flesh that is not firm, whatever is glutinous (4) we infer, is conducive to clogging the liver, increasing the weakness of the spleen and generating stone in the bladder as things resisting digestion in these organs.

Other things have cleansing power, soup or broth made from peas more than that made from beans, so much more that it has a tendency to dissolve stone in the kidneys, and it is the little peas which grew in his native land of Bithynia, towards which his heart is ever turning. The honey there rivals that of Attica. Melon seeds, figs and juniper, from which once we made gin as a staple diuretic, but largely for other uses, are useful. Cheese, unless it is fermented, is free from danger of stone formation, but the juice of it is very heating. Thick things combined with this are injurious, anything thick thickening the humors. Thus we get on the track of the

thought wrapped up in a humoral doctrine. Thick things, undigested and ripe for hardening, influence the humors to harden and form stone or tophi. In view of this line of argument it seems consistent to find ingredients of prescriptions for stone in the bladder and kidney in a work on family medicine (5).

The food then is the chief factor in the Galenic etiology of lithiasis. With us the water we drink, or the wine we drank, once was. I imagine it was because heat was so prominent in his mind as a theoretical cause of stone formation that Galen was impressed, before the days of statistics, with the frequency of its occurrence in children. It is possible, I suppose, it was more frequent then in children than it is now. Others are better judges than I of that possibility. Certainly it was prominent in the mind of Galen that heat is a cause of stone, and children felt warmer to his hand than adults. Nothing is more easy than for fallible man, however critical of the thories of others, to be misled by his own. We can perhaps understand why the young and those in the prime of life should have been thought to have more heat in their bodies, but just what the ancients meant by internal (6) heat and inborn heat and natural heat is not very clear and to some extent at least the terms seem interchangeable. "On account of the great heat in boys thick material loses by evaporation and forms stone." Not only does heat and the surfeit of the system, supposed to introduce superfluities into the blood, cause formation of stone but inflammation of the kidney.

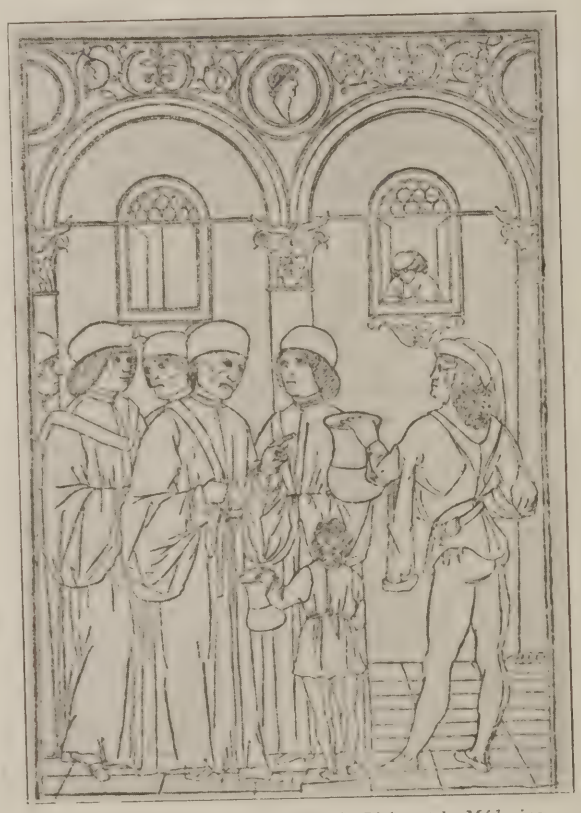

Fig. 1.—Uroscopy. From Richer's *L'Art et la Médecine.*

In the former connection Galen cites the sediment which collects in pipes and receptacles of water daily heated for the bath. Here we see a conception directly opposed to facts as they exist in the living body and an entirely erroneous analogy advanced from the inorganic. The heated urine holds the salts in solution and the urine ordinarily becomes cloudy and contains sediment on cooling, but for Galen the fundamental cause was the thickness of the humors however obvious his errors in the application of heat to his etiological theory. The guidance of Hippocrates is less obfuscated by theory. He quotes him in the discussion of stone in children in relation to their greater heat. Hippocrates, he cites, saying somewhere in his Epidemics: "Why, because warmer?" Why indeed? Galen from our point of view loses the point. The heat he thinks accounts for some of the thickness but not for all the viscidity of the humors. He had known children born with stone in the bladder. Some stress he lays upon the slender urinary passages in children, some to functional weakness and some to the indigestibility of milk. He becomes difficult to follow in the process, but he extracts from his argument that the urine in children is naturally thick.

The bladder being cold and bloodless and membranous and large, there is stagnation and the urine is not kept flowing. Children gorge themselves. They take milk at their mother's breast. They eat cheese, and all these things tend to thicken the urine. Speaking of thread and flake like bodies in the urine, as mentioned by Hippocrates in his Aphorisms, he conjectures such patients have been making use of "thick humoral meat" (7). We get the drift of his thought starting with the observation that high living, a surfeit of food and alcoholic drink is a fertile cause of kidney disease as a part of the lesions of circulatory disturbances. Surfeit is a good term for it and we are willing to allow superfluities in the urine, but the surfeit of food as a cause of disease we find not first in Hippocrates, but among the oldest of the traces of medicine we have of the Egyptians we find that is their conviction. Hippocrates does not lose sight of it but treats of it in sane fashion. Galen overstraining the theory of the humors is led into absurdities and distortions of fact and self contradictions. This mass of error was bequeathed to later generations and medicine had it as a heritage for more than 1500 years—the blight of a theory, which seems to have been coeval in its birth with this most ancient of all clinical observations of the cause of disease. Some there were who introduced the pneuma into the etiological chain and Galen, obsessed as he was with the doctrine of the humors, does not lose sight of it (8), but to this part of Hippocratic theory he gives little development.

Naturally in the symptomatology we get even a greater preponderance of the surgical kidney than is brought to our attention in studying the Galenic conception of the etiology, but nevertheless we get glimpses of disease of the kidney other than the surgical affections, impossible as it is to separate the discussion of them. As may be imagined from what has already been said, there is hardly an objective or a subjective sign that Galen does not associate with some divagation of an humoral etiology and

pathology, but there are some he records which seem to fall outside of this category. The surest signs of ulceration of the kidney are small pieces of flesh coming away in the urine, being part of the substance of the kidneys. From its association in the context we may perhaps think of a blood clot, but he seems to think it tissue torn from the edge of some gnawing ulcer and he turns to the Aphorisms of Hippocrates to annex to this condition the phenomena of the long threads seen also in the urine of some patients. These, he declares, are more probably from the veins. He likens them to helminths in color and size as they are described by others, but "not having seen them myself I have nothing to contribute either concerning their genesis or definite structure." If he has failed to note such things a span long and so large as described, he thinks these correspond in nature to the hair like threads he supposes come from the veins, though he is at a loss to account for the length of them, but he has seen them without any sign of kidney or bladder disease. Despite the contiguity of these phenomena, as they lie in the text, the threads and the flesh like bodies were not of equal significance (7). Despite his assurance the latter are the flesh of the kidney, he thinks of clots of blood. At any rate, he is sure they are not and that Hippocrates did not mean to say they were of the same nature as the threads.

Flakes in the urine, he agrees with Hippocrates, come from a furfuraceous inflammation of the bladder walls which like such affections of the skin he calls psoriasis, the small flakes having their origin in the veins and the large ones from the internal surface of the bladder. The pellicle of fat floating on the urine comes from a general liquidation of the fat in the body after a time, but when there is a fatty sediment it indicates a dissolution of the fat around the kidney or even in the kidney itself (8). In commenting on the lumbar pain he seems to think it a sign of inflammation of the muscles along the spine which spreads as does that of the adipose areolar tissue around the kidney to the organ itself. Thus there is no conception of kidney disease as part of a general vascular systemic disease, notwithstanding its etiological connection with overfeeding. He acquiesces in the advice of Hippocrates, "When they are full of food and have a heavy pain in the kidney they vomit phlegm. The pains are great and there is numbness in the thigh. The urine is dark colored and bloody with red sand in it. Rest does not help them or exercise drive away the pain, but the emesis gives relief. Give the young hellebore, bleed at the knee, clear them out with diuretics, diet and relax them." (9)

As to the pathology, some claim the stones are formed in the flesh of the kidney itself like the tophi of gout, but we are lost when he declares those who have sand and tophi in the urine show indications of having small swellings around the vena cava which soften and break down and from the pus the tophi form. They come out through the veins and enter the bladder with the urine. "Although this is the assertion of Hippocrates, it is not impossible the stones were formed in the kidney in the way I have described, baked hard with time and dried out of the thick and sticky humor they take on a tophoid structure." However, he is not unwilling to admit that the attractive force of the kidney is such that the sand grains may be forced through the walls of the veins (9). I fancy his thought is in his comments here on Hippocrates that, as he elsewhere declares (7), the passage of stone lacerating the kidney, the ureter and bladder, they may thus secure their exit from the veins. Blood of kidney origin and pus likewise as the result of the ulceration find their way into the urine. With these cases he was familiar as also with hemorrhage into the bladder, but it is not very intelligibly discussed, and though he has much to say of the purulent diseases of the urinary organs he does not discuss their surgical treatment at all.

The author's biblicgraphy will appear in his reprints.

Contributors to the Science of Medicine

Carlos Finlay

To have made a great discovery, to have fought to establish its correctness for more than twenty years, to have seen it accepted and put into practical operation for the benefit of humanity, and to have, therefore, been honored by all the world, is an achievement reached by few men. The son of a Scotch father, Carlos Juan Finlay inherited that clarity of vision and dogged tenacity of purpose, as well as the mental honesty which characterizes that hardy race. From a French mother he received the quality of imagination and the meticulous love of scientific detail and order, as well as the amiability and courtesy so typical of the French.

Born at Camagüey, Cuba, on December 3, 1833, educated by a Scotch aunt to the age of eleven, Finlay went in 1844 to Havre, where he remained two years, until obliged to return to Cuba on account of chorea. This was an affliction from which he never wholly recovered, and throughout his life he was afflicted by a peculiar slowness and hesitation in his speech. Returning to Europe in 1848, the unsettled political conditions existing in France at that time forced him to visit in London and Mayence, but the following year he was at school in Rouen, from which he was obliged to return to Cuba in 1851 in order to convalesce from an attack of typhoid fever.

Next he visited Philadelphia, where he was graduated from the Jefferson Medical College on March 10, 1855, and in the following year he went with his father, Edward Finlay, also a physician, to enter

practice in Lima. In this they were not successful, although a second attempt was made in 1857. In 1860-1861 young Finlay was doing postgraduate work in Paris; in 1864 he entered practice in Matanzas, Cuba, and in 1865 he married.

Finlay was essentially a student and a thinker, and as early as 1865 he was writing upon the etiology of yellow fever, with which he believed at that time the alkalinity of the atmosphere had something to do. This idea was not relinquished easily, and between that date and 1880 he wrote several papers on this subject.

Relatively few of those now engaged in the practice of public health have any knowledge of the National Board of Health, created by Act of Congress in 1879, and still fewer, of the International Sanitary Conference which was convened in the City of Washington January 5, 1881, largely through the efforts of that board. For more than twenty years there was not held another international sanitary conference in the United States. But had heed been taken of Finlay's words, uttered before the conference of 1881, the eradication of yellow fever would have been more quickly accomplished, and the world saved many lives and many millions of dollars. The doctrine which Finlay enunciated was revolutionary. It was a new scientific principle—one which had not been previously before the world. Beauperthuy, Nott and King had already expressed the opinion that mosquitoes had something to do with yellow fever. It is extremely doubtful if Finlay had any idea whatsoever of what they had said. They had not, however, reduced their opinions to a crystallized and workable epidemiological standard. The hypothesis to which Finlay gave utterance at the Conference of 1881, is as follows:

> It is my personal opinion that three conditions are necessary in order that the propagation of yellow fever shall take place:
>
> 1. The presence of a previous case of yellow fever within certain limits of time, counting back from the moment that we are considering.
>
> 2. The presence of a person apt to contract the disease.
>
> 3. The presence of an agent entirely independent for its existence both of the disease and of the sick man, but which is necessary in order that the disease shall be conveyed from the yellow fever patient to a healthy individual.

So far as the proceedings show, the announcement of this great scientific principle, which was to become the cornerstone of the entire combat of yellow fever, which was to make the building of the Panama Canal possible, which was to relieve humanity of a terrible scourge and commerce of an expensive impediment, passed practically unnoticed and undiscussed.

To a man of more brittle character, and less scientific tenacity, this would have been a crushing blow, but on August 14, 1881, Finlay presented to the Royal Academy of Medical, Physical and Natural Sciences of Havana, Cuba, a paper on "The Mosquito and Yellow Fever." Thirteen members of the Academy were present on that momentous occasion, and the minutes of the meeting do not disclose any discussion, although the Secretary-General announced that Dr. Finlay's work was at the disposal of the members who desired to examine it and make any suggestions on further studies. In this paper Finlay recorded his studies on the excessive alkalinity of the atmosphere of Havana, and its conjectural relations with yellow fever; he discussed the theories of the origin of propagation of the diseases, the atmospheric, miasmatic, meteorological, and other conditions hitherto supposed to play a rôle in the spread of the disease. Then follows a careful biological study of the mosquito, noting particularly that it is the female which bites in order that her eggs may be fructified; and as a final proof, Finlay records experiments which were made on five persons, in an attempt to prove whether or not yellow fever may be transmitted by the bites of mosquitoes. Of these five, one suffered a typical case of benign yellow fever; two had yellow fever in an abortive form; and two light ephemeral fevers of undetermined character.

There followed the work of years in the development of his hypothesis, and with the outbreak of the Spanish-American War, and although he was sixty-five years of age. Finlay took part in the campaign around Santiago. On his return to Havana in 1898, he brought his views to the attention of the officers of the American Army, the Cuban Government, and the medical journals of the United States. Generous, and desiring only that the world should profit by his labors, he cooperated wholeheartedly with the United States Army Medical Commission, headed by Walter Reed. Then, finally, the proof of his doctrine was made clear.

In 1902 he was made Chief Health Officer, and president of the Superior Board of Health of Cuba. Scientific honors of every sort were showered upon him. In 1909 he was appointed honorary president of the National Board of Sanitation and Charities, with a salary of $2,500 a year for life, and on August 20, 1915, the life of this great physician and scientist was closed.

Thanks to his indefatigable industry, his accuracy of observation, and his brilliant deductions, the weapon of eradication was placed in the hands of the field worker, and today the monument to mark the fact that Carlos Finlay lived and worked is the almost complete world extermination of an epidemic pestilence, the "jaundiced handmaiden of death," who in other years laid her deadly fingers on many a town and city, throttling its commerce, terrorizing its inhabitants, and bringing to premature dissolution the youth of the community.

Albert Schweitzer — Missionary, Musician, Physician.—Dr. Oskar Pfister (*Neue Zürcher Zeitung*, April 17 and 18, 1924) tells us that Albert Schweitzer is like the rainbow which gleams in every color, yet maintains a magnificently complete unity. It is his opinion that no living man has given significant literary expression to such a variety of talents. Schweitzer first came before the public when the violent storm was raging over his revolutionary works on the life of Christ and of Paul. His knowledge, ability and brilliance were unquestioned, but there was hardly anyone to agree with him in his opinions and ideas. His next essay was in the field of philosophy, especially that of Kant, where he seemed to outdo the master in absolute abstraction and remote intellectualism—until his two volume work on the philosophy of suggestion dem-

onstrated the contrary. The next works of this prolific and complex personality were on the history of music, and his monumental work on Bach and his edition of his fugues roused the admiration of all musicians who knew them, as did also his book on organ building in France and Germany. His first medical work was the famous *Psychiatric Judgment of Jesus,* soon followed by another philosophical contribution entitled *Between Water and Forest,* in which the ethnologist, the sociologist, the missionary, and the teacher joined forces in defense of the spirit.

But it is evident that literary productivity represents only part of Schweitzer's unique personality, writes the author. Over and above the scholar and the artist stands the man himself, intensely alive and governed by high ideals. When he was thirty, even at that early age overwhelmed with scientific and artistic successes, he was brought through the reading of a pamphlet to a lightning decision to take up the study of medicine. He sacrificed all his artistic triumphs and promise of a career, and devoted himself entirely to a thorough preparation in this study. When this was completed, he disposed of his art collections and went out as a medical missionary to the blacks of the Ogowe in Africa. "Here," writes Pfister, "he worked throughout days of burning heat in a shed of corrugated iron which he had had built, as a joke, precisely on the equator, occupied from morning till night with operations and the other duties of a physician. In the evening he would open up the sheet iron case that protected his beloved organ from the white ants, and solace and refresh himself with music, or would work on the history of civilization which he is writing. Forced out of his field of labor by the war, he seasoned his long captivity by committing to memory Bach's works for the organ, drumming with skillful fingers on his table and tapping on the floor with his feet to heighten the illusion. At the conclusion of the war, his lectures on mission work and the organ won a new place for him, and as soon as he could collect sufficient funds, he set out again for his African forest. Today at forty-nine he is journeying again to Africa in the hope that for some years to come he will retain the health necessary to carry on his arduous labors. To material possessions he is indifferent. His hope is that in his old age he may work and die as organist in an Alsatian village."

The writer goes on to tell us of a little biographical work by Schweitzer recently published entitled *Aus Meiner Kindheit und Jugendheit,* the outcome of a request by Pfister that he should furnish him with biographical material for a juvenile edition of *Between Water and Forest.* Pfister describes this little work, of which he received the first published copy, as plain, simple, and adorned with droll humor, in spite of the deep feeling with which it is written. He has kept the heart of the child in its best sense. Dr. Pfister is of course intensely interested in the psychology of the book, showing how the author's whole later development was conditioned and anticipated from his earliest childhood. His love of animals, which is given in Schweitzer's philosophy of life a prominent place, arose from a touching experience with an acquaintance who enjoyed hunting, and whom the lonely little boy would have been glad to have for a friend. Early one Sunday morning they met in a meadow where they were to hunt birds with a sling shot. But little Albert, as soon as the church bells sounded, could stand the sport no longer, and ran at the birds to frighten them away, leaving the friend he so much desired to return to his familiar loneliness. He thus learned compassion for animals, and to have no fear of human beings.

His sympathy for humans was aroused by watching a Jew who was accustomed to go through the village with a donkey cart, tormented by the children, but answering their taunts always with a good natured smile. "That smile won me," writes Schweitzer. "From that Jew I learned for the first time what it means to submit silently to persecution. He became a great teacher to me." His social conscience arose from a fight with a bigger and stronger boy. Albert knocked him down, but the boy retaliated by shouting, "If I had meat soup to eat twice a week like you, I'd be as strong as you are!" From that time Albert felt a disgust for meat soups. His social consciousness was awakened when he watched his uncle, after whom he was named, bringing milk during the siege of Paris to poor women.

His artistic abilities manifested themselves at an early age. At nine he could play the organ, although he objected strenuously to practising, preferring to improvise. Both his father and grandfather were musicians, the latter an organist.

Pfister attributes Schweitzer's remarkable versatility to a life of inner repression. The boy's earliest memory was a moment of terror in church when he mistook the organist with his bristling beard for the Devil. He had many other terrors in his early childhood. The mature man writes: "As far back as I can remember, I have always suffered so much from the misery I saw in life that I have never really felt real joy in living." Even the fact that every trifle made the boy laugh so that he was nicknamed Isaac, in Hebrew "the laugher," suggests hidden sorrows. Yet his childhood was a pleasant one and his parents were exceptionally intelligent and understanding. But they suffered much from poverty and sickness, and his mother was so reserved that she could not express her love outwardly, and this trait was handed down to little Albert. But, Pfister declares, all these hypotheses make only a patchwork of his remarkable life; no analysis can reveal the secret of such a personality. His father's recovery from a long illness, and his consequent joy in his companionship and in life itself, made the youth resolve at twenty to study science and music and to devote himself directly to the service of mankind. His career as a missionary physician was the culmination of these desires and his studies.

Dr. Pfister concludes his article with a most interesting summary of his analysis of Schweitzer, whom he calls "one of the most modern of modern men, sacrificing all that he had to the same purpose, who struck out into the primitive African forest, there to labor with incredible devotion on behalf of his bitterly suffering brethren—not as one who flees the world, but as one who desires to enlighten the world and to enrich its civilization; not as one who denies life, but rather in the spirit of one who seeks by every effort to help forward Christendom as the kingdom of God."

Editorial Articles

MUSIC AS MEDICINE

And David played before Saul, but it did not cure, nor did it seem to relieve, the headache (due, doubtless, to acromegaly, for Saul was a giant) or other symptoms of which the king complained. Possibly Saul had no taste for music and this new cure was advised by his courtiers as cures are now advised (or ill advised) by neighbors and even chance acquaintances. Possibly David did not play music of the right sort and, so, brought on himself, by lack of wisdom in selection, a narrow escape from death.

Periodically, music is advocated as a cure for disease. For over a century it has found a place, particularly in France, in the treatment of nervous and mental disorders, and marvelous results have been claimed from its use. That music exerts a profound influence, nervously or mentally, upon many persons there can be no denying; and if it influences the well, it also influences the ill. Whether it can produce cures is another matter, and might depend not only on the definition of disease but on what we may call a cure.

It has been tried in connection with dentistry and even as an adjunct to the operating room. Certainly in many cases it is a great comforter—a great distraction from other and less helpful lines of activity—and, so, beneficial. It helps to pass the time pleasantly and objectively and that, after all, is the main issue in an invalid career. It has recently been made use of in the hospitals, both general and special, of New York city on an organized and extensive scale, and it must certainly be worth all it costs. At one time a musical clinic was established in New York, at which patients could receive treatment and an elaborate therapeutic list of musical compositions was devised. It has been used in many hospitals for the insane with good effect in calming and entertaining these patients, and its adoption as a means of changing the nature of criminals has been seriously considered by a national organization which interests itself in the conduct of prisons.

Many studies have been undertaken to find the physiological effects of music—the definite functional changes which go on as a background for emotional results. The pulse and respirations have been found to be quickened by martial strains and slowed by minor melodies, and the effects on fatigue have been noted. The latest of the laboratory checkings of what has always been known empirically, is on the effects upon electrocardiograms and blood pressure. As carried out by Ida H. Hyde of the University of Kansas, "the plan was to compare the effects of vocal music and that of different native endowment and training and under varying conditions, but only a beginning was made—enough, however, to prove that investigations in this field offer important returns." It was found that "most people are favorably affected, psychologically and physiologically, by music that is characterized by tragic, mournful tones, and favorably affected by gay, rhythmical rich toned harmonic melodies. Individual differences in native endowment and training are accompanied by individual differences in physiological reactions to certain musical compositions.

The indications are, that those selections of music rendered either vocally or instrumentally that exert a favorable reflex action on the cardiovascular system, have also a favorable influence upon the muscle tone, working power, digestion, secretions and other functions of the body."

Among other experiments, a lullaby was played on a violin for a woman "who appeared to suffer from nutritional disturbances as a consequence of influenza." The electrocardiogram showed a disordered heart action with auricular flutter. "Both her husband and the experimenter were amazed at the suddenness of change in the cardiac contractions when the lullaby was heard. In some of the tests the deflections of the flutter decreased, in others they apparently ceased. The systolic and pulse pressures and relative velocity of blood flow were increased, but the pulse rate and electromotive force of the ventricular muscle decreased. The musical tones proved restful and beneficial to the patient."

THE CARE OF INFANTS

Regarded from one point of view infants are better cared for, at the present time, than at any other period. Considered from another aspect they are not so well cared for as was formerly the case. The infants of the poor and especially of the indigent, are better nourished and looked after than in bygone times. On the other hand, the infants of well to do and of fairly well to do people have not the advantages which those of a few decades ago possessed. Breast feeding with an unfortunately large proportion of mothers in easy circumstances has fallen into disfavor and there is no need here to dwell upon the superiority of breast feeding over any other kind of feeding for young infants. Except in a comparatively few cases mother's milk is the best food for infants.

But hospital service to infants has improved

beyond belief, that is, in most countries. In Italy there is a foundling hospital, the Spedale di Santa Maria degli in Florence, which is said to have been in continuous service for almost five hundred years. This hospital is housed in one of the first buildings of Renaissance architecture, the loggia of which is decorated with *bambini* infants in swaddling clothes, by Andrea della Robbia. This was the first institution of the kind in Italy. Perhaps the most scientifically arranged and managed is the magnificent institution in New York under the direction of Dr. A. F. Hess, in which many infants are brought up in glass cubicles to protect them from infection, being moved at intervals to open solaria to receive the benefit of unfiltered sunlight.

In London, there is the Infants' Hospital in Vincent's Square, which, under the directorship of Dr. Eric Pritchard, is beginning to make headway against the many difficulties, financial and otherwise, which are inherent in the management of all such places. The London Infants' Hospital is a notable institution, both inpatient and outpatient departments are well built and arranged for the purpose and ideally situated. The inpatients' department will house in the neighborhood of thirty babies in the public wards without the least overcrowding, and there are also eighteen smaller rooms for isolation or for special cases. The inpatients' department is suitably equipped in every respect. The outpatients' department and nurses' home is in a separate commodious building close to the institution itself and providing accommodation for a very large number of infants.

The largest foundling hospital in the world is that in Moscow. All these institutions are doing good work and wherever and whenever possible the babies are fed at the breast. In the Florence hospital, in every case in which it can be done, mothers nurse their infants, and as striking evidence of the good effects of this natural proceeding, it may be said that in the stupendous Foundlings' Hospital in Moscow, the death rate of the babies nursed by their own mothers, other conditions being the same, is one half of the death rate among those nursed by foster mothers.

Of course, too, in institutions in which infants are massed together, the greatest care must be taken to allow plenty of space and air. If not the results are deplorable. In the Infants' Hospital on Randall's Island many years ago, the results of overcrowding and possibly lack of breast feeding were appalling. The proper teaching and practice of infant and child welfare are saving life and bringing up healthy children, but emphasis should be laid on the point that breast feeding should be encouraged wherever possible.

SOME NEW DIAGNOSTIC SIGNS IN SCARLET FEVER

There are cases in which the diagnosis of scarlatina is difficult and where diagnostic signs must be carefully looked for. The elbow fold sign (Pastia) is important, because it appears at the onset of the eruptive phase and remains for some time after in the form of an intense linear ecchymotic streak. To detect it, the forearm is extended and by a slight upwards or downwards traction the skin of the elbow fold becomes wrinkled. This sign is positive in at least ninety-five per cent. of cases and never is present in other erythemata or eruptive affections. Besides, it is valuable because when the scarlatinal eruption has disappeared it will be the means of making a retrospective diagnosis, since it persists for some days afterwards.

Other signs of the ecchymotic series should be searched for. That of the elastic band consists in the production of petechiæ on the forearm when pressure of forty to sixty mm. is made with an elastic band above the elbow for from five to fifteen minutes. This sign is met with in diseases other than scarlet fever and when positive it does not imply that the case is one of scarlatina, but when negative in scarlatiniform eruptions, it can be assumed that the process is not scarlatina.

Hecht's sign is the production of petechiæ by pinching the skin. It is not specific, but when it is not produced, or only with difficulty, the case probably is not scarlet fever.

The cupping glass sign is an exaggeration of the eruption and the production of petechiæ over the area covered by the glass. In scarlatina the ecchymotic petechiæ are fine and irregularly scattered over the area and are not superposed on the pores of the skin, while in measles the cupping glass provokes quite a different geographical outline.

Up to the present time laboratory researches have been negative and the research for the deviation of the complement is still being studied. The phenomenon of extinction described by Schultz and Charlton is based on the principle that the serum of convalescent scarlatina patients—as well as normal human serum—has the property of causing the eruption to disappear, while it has no action on other exanthemata. Scarlatinal blood serum withdrawn during the height of the disease has no action on the eruption.

Serum properly prepared and kept in ampoules will remain active for three months. It is interesting to note that Debré and Paraf state that the serum of convalescents is indicated in the treatment of serious cases of scarlatina. It should be used at the onset of the disease or malignant cases; the serum treatment does not appear to have any preventive action

on the secondary infectious complications of the disease.

The serum is given in intramuscular injections in doses of from forty to fifty c. c., and repeated on the following days at the same or a slightly lesser dose. Intravenous injections, which may cause shock, should be resorted to only with great precaution and in desperate cases.

"CHILDREN'S" DISEASES

The death rate from scarlet fever, measles and whooping cough have declined to nearly one fourth of what they were four decades ago, notwithstanding that no specific treatment has been in use for these diseases. The period is such a long one that the decline in deaths from these causes seems to be more than a mere periodical fall in the virulence of the infecting organism. Either such a decline has taken place in a more lasting way, however, or we have been acquiring a steadily increasing ability to combat the disease, for the number of cases does not seem to have declined with the decrease in mortality. According to a recent report of the Public Health Service which is based on the records of over thirty-five thousand children, eighty-nine per cent. have had measles by the time they have reached adult years, while seventy-eight per cent. have had whooping cough, sixty-five per cent. mumps, and fifty-two per cent. chickenpox. Measles, mumps, whooping cough, and chickenpox seem to have been more frequent among natives than among the foreign born.

The fact that chickenpox, for which little is yet done in the way of isolation, is comparatively infrequent, does not strengthen the opinion that quarantine for the four diseases of the group is effective to any considerable degree. The probabilities are that, by the time quarantine regulations are brought to bear on these four diseases, they have already been communicated to companions. We may check an epidemic but there is slower spread later.

The incidence of scarlet fever was twelve per cent., and of diphtheria, nine per cent., and these figures would tend to reestablish our confidence in quarantine and to indicate that it is really effective in diseases of a more definite and acute onset. The blame for the high incidence of the first mentioned diseases is thus thrown on the nature of the diseases rather than on the lack of effectiveness of isolation. The lesson to be learned from these figures is that the prevention of infection is far more necessary than the prevention of the spread of infection and, happily, we seem to be on the way toward this method of stamping out these diseases.

It is interesting to speculate on the causes of the decline in the death rate of measles and whooping cough. Possibly better conditions of living would receive most credit for with better housing and more sensible clothing there is less likelihood of complicating lung diseases. Possibly improved milk supply and better care of the tuberculous adults may have had not a little to do with these declines, for who knows but that many of the deaths from these diseases were due to a lighting up of a tuberculous process in the young subject which was not recognized as tuberculosis. The diminishing size of families and hence the better care which each child receives in health and in sickness may have had not a little influence in enabling the child to overcome the infection. After all, there is much that we do not know about these still common diseases.

THE CAUSE OF RICKETS

Perhaps the cause of rickets is nearer its solution than ever before. Some state confidently that it is solved. Up to a few years ago it was regarded by most authorities as mainly, if not wholly, due to a dietetic deficiency, and so widely current, indeed, was this belief that by many it was classed as a vitamine deficiency disease. Others held that it was due not only to vitamine deficiency but to a diet deficient in other constituents essential to sound health, the mineral salts for instance; in fact, that the condition was owing to an ill regulated diet. At the same time it was conceded that unhealthy environment, lack of sunshine and so on, were important factors in its causation. Recently, however, the theory that lack of light was the principal cause has been gaining ground and according to certain investigators this point has been absolutely proved.

Paton and Findlay, of Glasgow, are the chief English speaking exponents of this view. Hess, of New York, also is of the opinion that the absence of sufficient light, especially of sunshine, exerts a maleficent influence on the growth and the bones of children. Investigations in Vienna, possibly the most hunger stricken city of Europe and therefore the one best calculated to afford favorable opportunities for experiments with regard to the rickets question, were carried on for a considerable period of time with satisfactory results. Dr. Pirquet, of Vienna, delved into the matter with no definite outcome. The Lister Institute of Preventive Medicine sent out a commission headed by Dr. Harriette Chick who conducted lengthy investigations. The most convincing of these were somewhat as follows. From the sweepings of the slums of Vienna, Dr. Pirquet collected for the Lister Institute Commission one hundred infants who were housed under ideal conditions. Fifty of them were fed on the Pirquet re-

stricted rations and fifty under the charge of the commission had full milk and some codliver oil. This experiment took place in the spring and summer when the days were long and light and there was a good deal of sunshine. At the end of the time all the babies were in splendid condition and it was hard to say which was a Lister and which was a Pirquet baby. The obvious reason for this was that the light and sunlight, in particular, had had a remarkable vitalizing effect, so much so that infants fed on a restricted ration but scientifically regulated except that it lacked codliver oil, flourished.

The next experiment began when winter set in, and in the absence of sunlight, the food and its quality was the dominating factor. The babies without codliver oil and other food constituents wanting in the diet of the Pirquet infants failed to put on weight —began to exhibit symptoms of rickets. Consequently, it seemed that definite proof had been given that the first tendency to rickets is imparted by deficient diet, but that this tendency can be neutralized by plenty of sunlight. In short, that the absence or lack of sunlight and proper food will bring about rickets. Moreover, investigations have shown that the ultraviolet rays will prevent or cure rickets and in a less degree will take the place of sunlight. This was proved in Vienna and has been proved in the slums of London and of other big cities.

Finally, it has been established that the primary cause of rickets is deficiency in the quality of the food, but that sunlight, or the ultraviolet rays, will effect such changes in a child's organism as to enable it to cope with the deficiency. The healthful influence of sunlight is striking. Of course, it stimulates growth and is quite as remedial in the case of surgical tuberculosis as in rickets. The latest discovery in this direction is the most remarkable. It is not essential that light be applied directly. If a volume of air is rayed, or if a piece of radium is suspended in it, the air itself appears to become possessed of healing properties. How the rays affect the air is not known. When this secret of nature is revealed we shall begin to understand better how and why climate affects health and disease.

The causes of a stunted and rickety population are partly wrong food and partly not enough light. It is difficult to exactly apportion the blame to one or other of these causes, and in spite of the assertions that the causation of rickets is definitely solved there are several points yet to be cleared up. People who live in almost continual sunshine, and not in tropical countries either, are not more healthy, if so healthy and vigorous as those who live in a temperate variable climate under favorable conditions so far as food and environment are concerned as in Great Britain, for example, or in Canada. There is an old and true saying that "one may have too much of a good thing," and this applies even to sunshine.

Is rickets prevalent in the cold dull zones of the earth? While a sufficiency of sunshine is absolutely necessary, suitable food is quite as essential and it must be a food which is adapted to the climate. The tendency nowadays is to eat too much artificially prepared and cold storage foods and not to give our jaws and teeth sufficient exercise. Further, babies, generally speaking, are given more food than they require and overeating as a cause of rickets is overlooked. Quality of food is of greater importance than quantity and diet still bulks large in the causation of rickets. Diet and light, combined with home environment, are the main causes of rickets as they are of many conditions of ill health. It should likewise be borne in mind that after all heredity is one of the most important factors with regard to good health, and especially with respect to tenacity of life. Man may not inherit many physical or mental traits or defects, but his ancestors are responsible, to a large extent, for the quality of his brains and physique.

DISEASE AND ITS TREATMENT

Conceptions as to the nature of disease have changed and are changing. While few, perhaps, will go as far as Mr. McDonagh that there is really only one disease, that is a battle between the body and invading organisms for free electricity, yet all will agree that disease is a question of the defensive powers of the body being at a low ebb and therefore unable to defend its territory in the strenuous way it would if the system were in a healthy condition. It is believed that the leucocytes are mainly responsible for the defense of the body and that if they are present in large numbers, its capture by the enemy is impossible. In proportion as ideas with regard to the nature of disease are undergoing reconsideration so of course are the views respecting the action of drugs. In the case of an infection it has long been held that a drug acted directly on the infection and that the ideal drug for which every chemist was searching eagerly was one which at one and the same time would destroy the invading organism and be harmless to the system. When salvarsan was first brought out it was hailed as such a drug. Longer experience seemed to show that it did not act in this manner.

The most recent theory of the therapeutic effect of drugs is that they act directly on the protective mechanism of the body. This is to say that if this be stimulated the invader is routed, but if it be destroyed the invader gains the day. Therefore the

drug does not attack the disease directly but marshals the defensive forces and stimulates them to increase the resistance of the body. In a paper contributed to this journal by Dr. Burr Ferguson, medical officer in charge of the United States Public Health Service at Southampton, England, this theory appears to receive confirmation in many respects. Dr. Ferguson has been making investigations in the treatment of certain infections by inducing an increase of white blood cells, or rather he found that in the successful treatment of certain forms of infection in which salicylate of mercury was given the white blood cells were increased very largely. The results accruing from the treatment by Dr. Ferguson appear to show definitely that mercury does not cure the disease, that is, does not act directly upon it, but that its value lies in the stimulation of the production of white blood cells, generally believed to be the main means of defense of the body. The article of Dr. Ferguson favors this theory.

HOMICIDE STATISTICS

Because homicide has become so frequent as to be a menace to insurance companies, and also because of its importance as a social problem, the Metropolitan Life Insurance Company has recently made an investigation of 146 homicide cases taken at random, which in turn led to an inquiry into the procedure of officials and courts in this country. The United States has a homicide rate seventeen times that of England and Wales, and six times that of Canada. Since the investigation showed that only one person out of the 146 paid the death penalty the court procedure inquiry was made, but, the report states, "the exact facts on police and judicial activity for a sufficiently large area of the country are unavailable," so data were secured on the procedure following homicide cases among policy holders. "There have been numerous attempts," the report goes on to say, "to apologize for the extraordinary figures for the United States, but these explanations are highly speculative in character.

The fact remains that in the United States each year many more lives are sacrificed to the homicidal impulse than one would expect from the records of other countries in at least the same advanced state of civilization. It has been hinted that inability to apprehend, indict, and try assailants, and to make prompt and definite disposition of homicide cases were important factors in accounting for the situation in this country. . . . The facts for the 146 homicides show that thirty-two were socalled justifiable homicides! . . . Now what happened to the assailants in the other 114 cases? There was an indictment in sixty-nine cases, or in 60.5 per cent. of the 114 unjustified homicides! The forty-five unindicted cases (39.5 per cent. of the 114 murder and manslaughter cases) showed that in one third the assailants were still at large, that in twenty-two cases the assailant committed suicide, and in eight the evidence was insufficient to warrant indictment.

"What followed the sixty-nine indictments? Eleven were 'no trial' cases! In fifty-eight trials a verdict of 'not guilty' was rendered in sixteen cases, or 27.6 per cent. of the trials. One mistrial resulted. Of the forty-one judged to be guilty, thirty-five are serving time, with appeal pending in six cases; three are being held either for a new trial or pending an appeal; one was paroled, one fined, and one executed! Summarizing: out of 146 homicides, including 114 manslaughter or murder cases, there were thirty-five penitentiary timeservers, one parole, one fine, and one execution!"

Since in 1923 the Metropolitan Life Insurance Company paid out in homicide claims alone $724,000, it feels justified in claiming that "Wholly apart from questions of law, order and safety of the person, this element of American mortality is a source of serious loss to the policy holders of life insurance companies, and from this viewpoint detailed inquiry into origins and remedial action with respect to homicide is warranted."

More serious than this to the average citizen is the meaning of the facts themselves as showing basically wrong social conditions, a failure to handle properly the punitive and prohibitive measures of the country with a view to prevention rather than punishment, and the whole serious problem of the death penalty itself.

Obituary.

JOHN BINGHAM ROBERTS, M.D.

Philadelphia

The death of Dr. John Bingham Roberts, of Philadelphia, on November 28, 1924, means a significant loss to American surgery. Death came as the result of injuries received several weeks ago, when he was struck by an automobile. He was seventy-two years of age.

Dr. Roberts was well known in this country, not only through his success as a practising surgeon, but also for his teaching in various medical schools and colleges, and his writings on his specialty. Among the last were many articles and papers on surgery and medicine, and such well known works as his *Paracentesis of the Pericardium, A Compend of Anatomy, Surgery of the Human Brain, Treatise on Modern Surgery, Modern Medicine and Homeopathy, Fractures of the Radius, Modern Treatment of Fractures,* and *Deformities of the Face.* Dr. Roberts was also a member of the editorial staff of several of the leading journals of medicine and surgery.

He was at the time of his death president of the American Surgical Association, former president of the American College of Surgeons, was president of the American Academy of Medicine in 1904, and president of the Philadelphia County Medical Society and of the Medical Society of the State of Pennsylvania. He held also the positions of professor emeritus of surgery of the Graduate School of Medicine of the University of Pennsylvania, and was professor of surgery at the Philadelphia Polyclinic.

News Items.

Harvey Society Lectures.—Announcement is made of two coming Harvey Society lectures,—January 17, 1925, on "Etiology of Scarlet Fever," by Dr. A. R. Dochez, of Columbia University Medical School, and March 21, 1925, on "Intestinal Absorption of Antigenic Protein in Infancy," by Dr. Oscar M. Schloss, of Cornell University Medical School. The lectures are given at the New York Academy of Medicine.

Samuel D. Gross Prize.—Essays in competition for the Samuel D. Gross Prize will be received until January 1, 1925, by the trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 South Twenty-second Street, Philadelphia. The prize is awarded every five years for an original essay on surgical practice or surgical pathology. Details may be obtained from the Academy of Surgery.

Civil Service Examinations.—Examinations for the position of medical intern (psychiatric), entrance salary of $1,860 a year, vacancy at St. Elizabeth's Hospital, Washington, D. C., will be received until June 30, 1925. Examinations for the positions of trained nurse and trained nurse (psychiatric), both male and female, at entrance salaries of from $120 to $140 a month, vacancies in the Panama Canal Service, will be received until January 21, 1925. Applications should be made to the U. S. Civil Service Commission.

Centenary of Charcot.—During the first days of June, 1925, the centenary of the birth of Charcot will be celebrated in Paris, by the Academy of Medicine, the Faculty of Medicine, and the Neurological Society of Paris. Numerous delegates from other countries are expected. At the same time, the Neurological Society of Paris will hold the sixth international reunion, and celebrate its twenty-fifth anniversary. Information may be obtained from Dr. A. Souques, general secretary of the Organization Committee, 17 Rue de l'Université, Paris VII, France.

Reorganization at the Postgraduate.—The New York Postgraduate Medical School and Hospital secured, during the last session of the legislature, an amendment to its charter altering the qualifications for membership in the board of directors. As a result, a reorganization has taken place whereby life membership has given place to membership for terms of six years, and the active attending physicians of the hospital are ineligible for election. There will also be a medical board, consisting of all members of the faculty having professorial rank. This arrangement will free the medical men from the burdens of business management and thus give them more time to devote to scientific work and teaching. The directors are Henry D. Chapin, M.D., Vincent Astor, James C. Brady, Edgar H. Boles, Clarence Dillon, William Fahnestock, William V. Griffin, Ludwig Kast, M.D., James F. McKernon, M.D., George T. Slade and the Rev. Karl Reiland. The officers elected for the ensuing year were: President, Dr. James F. McKernon; first vice-president, William V. Griffin; second vice-president, Edgar H. Boles; treasurer, William Fahnestock, and secretary, Robert E. Allen.

New Fellows of American College of Surgeons.—Lists of fellowships recently conferred by the American College of Surgeons have been announced. These include the following New York and Brooklyn surgeons:

New York: Paul William Aschner, Ernest Archibald Campbell, Mather Cleveland, Harry Cohen, Achilles Edward Davis, Frank Nicholls Dealy, Alexander Duane, Samuel J. Druskin, John H. Dunnington, James Ives Edgerton, Antonio Fanoni, Benjamin Peter Farrell, Harry Finkelstein, Lyon L. Fulkerson, Julius Gottesman, Harbeck Halsted, John M. Hanford, Isaac M. Heller, Russell A. Hibbs, Henry H. Ritter, Solomon Rottenberg, Samuel Jerome Scadron, Emma Selkin-Aronson, Robert J. Shea, William Irving Sirovich, Goodrich Truman Smith, William M. Higgins, Warren Hildreth, Joseph D. Kelly, Arthur Krida, Thomas F. Lancer, Thomas E. Lavell, Maximilian Lewson, Abraham Lightstone, John D. Lucey, Junius H. McHenry, William McLean, John H. Morrissey, William R. Morse, Jos. Augustus Mulholland, Frederick Emil Neef, John M. O'Connor, Salvatore di Palma, Otto C. Pickhardt, Gouverneur M. Phelps, Meyer M. Stark, Maximilian Stern, Alfred H. Thomas, Julius John Valentine, Charles Vejvoda, Allen O. Whipple, August F. A. Wiggers, Arthur S. Wilson.

Brookklyn and Long Island: S. Potter Bartley, Frank Samuel Child, Jr., Burnett Charles Collins, Joseph B. Conolly, Stephen De Coste, William Fawcett-Shaw, George D. Fisher, S. Lloyd Fisher, Arthur Goetsch, George Hills Iler, Robert E. Kinloch, David Livingstone and Harry Meyersburg.

Endowment at Jewish Memorial Hospital.—Beds in both male and female wards at the Jewish Memorial Hospital have been endowed for free treatment of rectal diseases. Dr. Arthur A. Landsman is attending proctologist in charge of the service.

Lecture on Stomatology.—Dr. Anthony Bassler will deliver a lecture on Stomatology in Relation to Internal Medicine at the monthly meeting of the American Stomatological Association, January 8, 1925, at 8.30 p. m., at 50 West Eighty-eighth Street, New York.

Visiting Nurse Service.—The New York Visiting Nurse Service is carrying on a campaign for funds. During the last year 50,300 patients were cared for, of whom 15,727 were children under five years. It is hoped to raise funds for the support of two hundred nurses for the next year.

New Danish Legislation.—A bill has been introduced in the Danish Parliament authorizing the taking of the life of patients "to release a hopelessly ill person from severe and inevitable suffering." Under the old law, this act, at the patient's request, came within the designation of murder or manslaughter.

Pasteur Relics.—Two small flasks and a U-tube, used by Pasteur while dean of the faculty of sciences of the University of Lille, from 1854 to 1857, have been sent to Columbia University by Professor Pascal, of France. The pieces are to be displayed in the Chandler Chemical Museum. Pasteur began his study of fermentation while he was at the University of Lille.

Course in Clinical Stomatology.—Postgraduate courses, open to physicians and dentists, to be held for ten weeks beginning February 18th, are to be given by the New York State Society of the American Stomatological Association, as follows: Stomatological Bacteriology, by William H. Park, M.D., and Charles Krumwiede, M.D.; Physiology of Nutrition and Diet Selection, by Holmes C. Jackson, Ph.D.; and Clinical Stomatology, by Alfred Asgis, D.D.S., John L. Kelly, D.M.D., and N. Philip Norman, M.D. Application should be made to the New York Stomatological Clinics, 33 West Forty-second Street, New York.

Hospital News.—A bequest of one million dollars for the construction of a branch hospital or ward for persons of moderate means has been received by Massachusetts General Hospital through the will of Mary R. Richardson of Newport, Rhode Island.

The Philadelphia General Hospital has opened an annex for women with tuberculosis. The building cost $275,000; the wards contain only from four to eight beds.

The Fifth Avenue Hospital has begun work on a nurses' home.

The James Buchanan Brady Foundation of the New York Hospital, has opened a night clinic for women with diseases of the gallbladder, kidneys, etc.

The Speers Memorial Hospital of Dayton, Kentucky, has opened a new nurses' home, with quarters for thirty-six nurses, as well as classrooms.

The campaign for the Beth Israel Hospital of Newark, New Jersey, shows $1,845,607.20, as the amount raised, over three hundred thousand dollars more than called for.

Personal.—Dr. George Schwartz has been appointed visiting surgeon to the Heckscher Foundation Hospital, of New York.

Edward C. Kendall, Ph.D., of the Mayo Foundation, has been chosen as the Chandler lecturer at Columbia, and he will receive the Chandler medal at a meeting in February.

Dr. Charles Rosenheck has been appointed associate attending neurologist at the Jewish Memorial Hospital of New York.

Dr. Joseph T. Berkowitz, of the staff of St. Mark's Hospital, and Miss Rebecca Garfinkel, of Brooklyn, were married on November 30th.

Dr. Nathaniel Thomas Ennett, of Richmond, Virginia, has been appointed medical director of the city schools.

Dr. W. J. V. Osterhout, professor of botany at Harvard University, has been appointed a member of the scientific staff of the Rockefeller Institute for Medical Research, the appointment to take effect in 1925.

Dr. Emil Altman is the first appointee to the newly created position of Chief Medical Examiner of the Board of Education of New York.

Foreign Correspondence

LONDON LETTER

(*From our own correspondent*)

LONDON, *November 9, 1924.*

PRESIDENTIAL ADDRESS.

Mr. Paterson, a London surgeon who is well known in America, was elected recently to the presidency of the surgical section of the Royal Society of Medicine. On November 5th he delivered his presidential address which he entitled The Lure of the New. With regard to the advances of modern surgery Huxley's cynical remark was quoted that the "Customary fate of new truths is to begin as heresies and end as superstitions" and the speaker went on to point out that nevertheless we are ever seeking new lamps for old. Some of our new lamps have a dazzling brilliance, but their endurance is transient; others shine as beacon lights on the pathway of progress. Although every inventor or originator is not necessarily an Aladdin, he plays a part of supreme importance in surgery. As in every other field of human activity, whether his ideas be trivial or important, he stimulates thought. Like Lister, he may change the whole practice of surgery, or he may merely make some small suggestion which ultimately may prove part of an epochmaking discovery. His new lamps may be useless for the purpose for which they were designed but in other directions may prove of extreme value. Sayre's plaster jacket was intended for the treatment of scoliosis. The method was sound, but its application was erroneous, but by drawing attention to this subject, in time it led to the enunciation of the correct principles on which lateral curvatures should be treated.

The birth of modern intestinal surgery may be attributed to an invention long since discarded, Murphy's button. The introduction of this method demonstrated the possibilities of intestinal anastomosis and by focusing interest on this subject led to methods which have superseded the use of mechanical appliances.

Not seldom the new lamps given to us by inventors are spoilt by injudicious modifications or improper use. When Sir Arbuthnot Lane introduced his method of plating simple fractures, some surgeons employed it for the treatment of compound fractures with unsatisfactory and often disastrous results. They were putting a valuable procedure to a use to which its originator stated it was totally unsuitable. He did not suggest that a new invention cannot be improved, but before attempting to make improvements it is wise to ascertain whether our ideas have already been tried without success. He thought it would be conceded that even the greatest discoveries have disadvantages as well as compensations.

The two greatest blessings given to surgery during the past century, anesthesia and the principles of asepsis, are not excepted from this generalization. Both have tended to prolong operations unnecessarily, so that to this extent they have been harmful although the sum of the benefits they have conferred is priceless. In preanesthetic days the surgeon tried to complete his work as speedily as possible, because he was inflicting pain. With the introduction of anesthesia the surgeon could be more deliberate in his methods and so unconsciously prejudiced the interests of his patients. In this respect the war was a bad training for young surgeons. Many long and very severe operations were performed for abdominal injuries, but the natural resistance of the patients was very different from that of the ordinary patient of civil life.

In his fascinating presidential address to this section two years ago, Mr. James Berry emphasized the value to the young surgeon of a thorough training in the making of postmortem examinations. He would add to this wise advice that, in addition, some experience as an anesthetist should form part of the training of anyone who aspired to practise surgery. He would learn not only many useful surgical lessons, but he would understand more of the shock produced by operations. The drugs used to induce anesthesia are highly toxic, and we are apt to forget that apart altogether from the effect of the operation, the anesthetic has also a harmful influence on the patient. Every experienced anesthetist knows that even the strongest patient begins to flag perceptibly after an hour, and after an hour and a half this change is yet more accentuated. Dr. R. T. Morris of New York relates how a house surgeon, who had served under two surgeons of about equal capability, was asked his reason for the difference in their statistics. His reply was "About ten minutes." There was a wealth of wisdom in this seeming exaggeration. The expert anesthetist not being a politician keeps our patients in such a state of tranquillity that we are tempted to be almost too deliberate, and to forget the importance of rapid, or rather expeditious operating. We must not make a goddess of technic and to forget it is of no less importance to assist nature by conserving the patient's resistance. Better incomplete technic and a live patient than a perfect technic and a dead patient.

He was not sure that a good case could not be made against the use of rubber gloves. At any rate, Sir Harold Stiles without them has achieved results surpassed by none. Lawson Tait, too, showed what could be done with a simple technic and expeditious operating. His results were so good that the surgeons of his day took refuge in regarding their accuracy with an attitude of unphilosophical doubt.

Not the least interesting part of the address was that in which intestinal stasis and its aftereffects were dealt with. This subject was thus commented on. Not one of the least dazzling lamps given to medicine in recent years is the hypothesis that intestinal stasis is responsible for many of the ills to which our flesh is heir. It is alluring in its simplicity and fascinating from the vista of hope which it opens up. It has been given to few to originate two such startling proposals as the operative treatment of simple fractures and the surgical treatment of intestinal stasis and Arbuthnot Lane has not escaped

the criticism and bitter opposition which falls to the lot of all pioneers. Few subjects have excited greater controversy than the statement that intestinal stasis produces toxemia. It has been assumed that such teaching is unscientific, because we do not know the nature of the toxins produced or even of their existence. The argument need not perturb the seeker after truth. The malaise and debility which accompany tuberculosis were recognized long before the discovery of the bacillus which cause the constitutional symptoms. This much at least we do know, that patients who are the victims of a disorder which impairs their mental and bodily vigor, which causes such constant discomfort and pain as to reduce them to a state of misery, and which renders them incapable either of work or enjoyment of the pleasures of life, may be relieved by treatment directed to the removal of existing intestinal stasis. This is a truth established by the work of surgeons all the world over. When, however, we consider to what extent surgery should interfere there is room for wide divergence of view. Whether all Lane's teaching be true or not, time alone can show, but without doubt the lamp has cast light in hitherto dark places, and has led to a new conception of abdominal disease.

The speaker then took a tilt against the extent to which specialization has been carried nowadays. He likewise saw reason to regret the reliance or rather dependence placed on the laboratory for diagnostic purposes, and deplored the manner in which clinical observations and methods were comparatively neglected, almost falling into disrepute. He thought this tendency was to be greatly deprecated. He pointed out that the surgeon of the day was not a carpenter to operate at the behest of others, but rightly expected to make his own diagnosis and form his own judgment. Indeed, according to Mr. Paterson a surgeon may be defined as a physician who has learned to use his hands.

Sir St. Clair Thomson, the president of the Royal Society of Medicine, in moving a vote of thanks to Mr. Paterson for his address, made some of those witty remarks for which he is famous. In referring to Mr. Paterson's definition of a surgeon as a physician who has learned to use his hands, he said that the retort to this was obvious and as he was a fellow of the College of Physicians as well as of the College of Surgeons no one was better fitted to make it than himself. The physician was the surgeon who had learned to use his brains.

APPOINTMENT OF DR. LLEWELLYN J. LLEWELLYN AS A MEMBER OF THE BOARD OF MEDICINE FOR THE UNIVERSITIES OF WALES

There exists a great desire among those who have the welfare of Wales and of the Welsh medical schools at heart to unite the Welsh medical schools into a Welsh national medical school of2 medicine. Dr. L. J. Llewellyn, who has been appointed recently a member of the Board of Medicine for the Universities of Wales, is peculiarly well fitted to lend substantial aid to develop the embryo scheme and to bring it to completion. He enjoys an international reputation as an authority on gout, fibrositis and diseases which are generally, although perhaps incorrectly, classed under the head of rheumatism. Dr. Llewellyn has written a classic on gout, which has been translated into French at the express wish of French experts on the subject. He has also written a classic on fibrositis and masterly works on some other phases of rheumatism. He served on the Pensions Board during the war and wrote a much quoted book on malingering.

The catholic outlook necessarily implanted and engendered by these various activities have given Dr. Llewellyn not only a medical but medicolegal outlook which will undoubtedly make his assistance in drawing up and carrying into effect a plan for the amalgamation of the medical schools of the Welsh Universities into a national school, of the utmost value. It should be added that the scheme is still quite subjudice and that there are many difficulties to be encountered and overcome ere success is even in sight. However, as said before, the scheme is good and one which will commend itself to all patriotic Welshmen, of whom Dr. Llewellyn is by no means the least patriotic, wherever they may dwell.

GENEVA LETTER

(*From our own correspondent.*)

GENEVA, *November 17, 1924.*

SWISS SOCIETY OF PSYCHIATRY

The program of the Swiss Society of Psychiatry, which met at Zurich on November 15th and 16th was devoted to the subject of general paralysis and on account of the importance of this question of mental pathology the titles of the reports and papers read are highly interesting. The first report, by Professor Binswanger, of Kreuzlingen, was on the pathology and pathogenesis of general paralysis, and this was followed by a paper by Professor Maier, of Zurich, on the statistics of general paralysis in the Swiss asylums. Dr. Steck, of Cery, read a paper on the striate syndrome of general paralysis, while Dr. E. Minkowski, of Paris, presented a remarkable paper on the comparative psychology of general paralysis and schizophrenia.

After a discussion of these papers Professor Spielmeyer, of Munich, read a report on the pathological anatomy of general paralysis, and Dr. Steck, of Cery, gave an interesting demonstration of neurological proliferations in this disease. Dr. Targowla, of Paris, treated the subject of serology in general paralysis, these contributions being followed by the report read by Professor Hoche, of Freiburg in Brisgau, on the treatment of this disease. This unusually successful meeting closed with two interesting contributions, the first by Dr. Bersot, of Zurich, on malariatherapy of general paralysis, the second by Dr. Brunner, of Küssnacht, on the endolumbar treatment of general paralysis, according to Gennerrich's method.

PASTEUR INSTITUTE REPORT

From the report of the Pasteur Institute at Bern, of the work accomplished during the year 1923, it appears that seventeen persons received prophylactic treatment for rabies. For so small a population as Switzerland, these figures may appear relatively large, and when compared with the number treated

in 1921 (twelve) and four in 1922. The canton of Tessin sent twelve cases, the cantons of Bern, Lucerne, Vaud and Neuchâtel respectively two, one, one, one.

Of the patients treated, twelve—being all those from the Tessin—had been bitten by animals with avowed rabies; in the remaining five the animals were under suspicion. In sixteen cases the animals were dogs, while the seventeenth patient was bitten by a fox who attacked the child while at play. Autopsy of the fox showed that the animal was not rabid. All the patients remained well after treatment.

NEW EDITION OF THE PHARMACOPŒIA HELVETICA

The committee ordered to prepare a new edition of the Pharmacopœia Helvetica has nearly completed its work and the new edition will be published shortly which, if it is as concise and simple as the present one, should be a model for all countries.

INTERNATIONAL OPIUM CONVENTION

The International Opium Convention will have completed its work by the end of this year. I learn from a competent source that the Swiss Government intends to ratify this international act without delay. Besides, in conformity with the practice adopted and according to which all ratifications of international conventions must be accompanied by legislative acts destined to assure their application. The Federal Council will submit to the Federal Assembly a draft of a law regulating the sale of narcotics and stupefacient medication following the general stipulations of the opium convention.

SMALLPOX IN SWITZERLAND

The smallpox epidemic in Switzerland, which commenced in 1921, still exists and shows a distinct tendency to spread. In point of fact there are now sixteen cantons invaded, as against thirteen in 1922. In some the disease is merely sporadic. Last year the total number of cases reported was 2145, as against 1159 in 1922. Of the 2145 cases, 1315—or more than 50 per cent—were reported from the canton of Bern, this being the most important focus of the disease. After Bern, the most infected cantons are Zurich, Lucerne, Argovie and Thurgovie.

The epidemic has maintained a relative benignancy from the onset since only one death has been recorded, that of a sixty-nine year old man. This benign character seems to apply to all present smallpox epidemics, particularly England, and this fact is interesting because it would seem to show that we are not dealing with an accidental phenomenon, but with a more general one, conditioned by a time attenuation of the virus, the cause of which is as yet not clear.

Although the mortality has been practically *nil* in Switzerland, it must be pointed out that many of the cases were serious forms of the disease and there is nothing that can lead one to suppose that at any time the disease may not suddenly assume its usual virulence, as is the case with other transmissible diseases.

The Swiss authorities are dealing severely with the epidemic and the value of compulsory vaccination has given ample proof of its real value. In the cantons of Tessin and the Grisons, where the law is conscientiously applied, not a single case has developed, and this likewise applies to French Switzerland —Geneva, Lausanne, etc.—where the law of compulsory vaccination is in force.

SANITARY CONDITIONS IN ORIENTAL EUROPE

At the present writing the sanitary condition of Oriental Europe—especially Russia and Poland—has notably improved and has relieved certain fears of the Swiss sanitary authorities which last year were entertained for very good reasons. This improvement is unquestionably in part due to the activities of organizations created by the League of Nations. These are under the direction of highly competent personalities and the results obtained have been truly remarkable. The epidemics of typhus, cholera and the plague, which were a menace to all Europe, have progressively been repelled; their foci have been narrowly walled off, thus diminishing the areas of disease. It should be said that the Swiss quarantine stations at the frontier, existing at Bâle, Buchs, Chiasso and Brigue, have been admirably organized and have controlled the sanitary condition of 21,014 travelers who entered Switzerland, 19,510 coming from countries where typhus existed, while 1,504 came from countries where the plague raged.

LATIN AMERICA LETTER

(From our own correspondent.)

Balboa Heights, Canal Zone,
November 14, 1924.

AMERICAN PHYSICIAN HONORED BY CHILE

Upon the reorganization of the new government of Chile, the new President of the Republic cabled the Chilean Ambassador at Washington, instructing him to negotiate for the services of Assistant Surgeon General John D. Long of the United States Public Health Service to serve as director of the newly organized Department of Health of Chile. Doctor Washington. In the course of his official work he has spent many years in the Philippine Islands where he was first chief quarantine officer and later chief health officer. At present he is chief of foreign and insular quarantine of the U. S. Public Health Service, and medical director of the Pan-American Union at Washington. In the course of his official work he has made many trips to Central and South America for the purpose of studying various health conditions in these countries. He speaks Spanish fluently and has made many sincere friends among the officials of Latin America. At the time of this writing it has not been learned whether or not Dr. Long has accepted the invitation to go to Chile, but that country will be extremely fortunate if it succeeds in securing the services of this able sanitarian.

COSTA RICA ESTABLISHES SCHOOLS FOR SANITARIANS

At the last session of the Costa Rica Congress, a bill was passed by that body and signed by the President authorizing the establishment of a School of Public Health for Sanitarians. This school will be run in conjunction with the Public Health Laboratory recently established through funds donated by the Rockefeller Foundation. Graduates will be given employment by the Government to promote health

work throughout the Republic. The Government has also recently established a Division of Vital Statistics in its Department of Health. In this connection, Dr. José Guerrero has been sent to Johns Hopkins University to study under Professor Pearl. Upon completing his course Dr. Guerrero will return and take charge of the Division of Vital Statistics.

FLU-LIKE EPIDEMIC AT THE CANAL ZONE

Colonel W. P. Chamberlain, Chief Health Officer of the Panama Canal, announces the appearance of an epidemic, flu-like in character, but milder than the previous epidemics. More people have been affected upon the Pacific than the Atlantic side of the Isthmus. Adults and children have been affected alike and during the second week in November there were 156 children out of school. While the symptoms are somewhat mild, the disease has confined most of its victims to bed for four or five days with a slight fever. The eyes have been greatly affected both with severe pain and photophobia. A harsh bronchial cough lasts for several days and does not seem to respond to medication.

SCIENTIFIC EXPEDITION VISITS CANAL

His Majesty's steam yacht, *St. George* of the British Royal Yacht Club, tied up a few weeks ago at the Balboa docks of the Canal. The ship is bearing a body of British scientists to islands in the Pacific Ocean, where they will study and secure specimens of all forms of nature. The expedition is in charge of Captain Blair, retired commander of the British Navy. The complement includes scientists versed in biology, geology, climatology, medicine, etc. An author and a marine artist are in the group which includes also a cinematographer who will take pictures of animal and bird life of the islands. During the month of June the *St. George* first transited the Canal, on its way from England to the Galapagos Islands, where a very successful stay was made studying the reptile and animal life of these interesting islands. Upon leaving the Canal, the yacht will make a five months' tour of the Marquesas and other little known islands of the Pacific Ocean.

ISTHMIAN CANAL ZONE MEDICAL ASSOCIATION MEETING

The 214th meeting of the Isthmian Canal Zone Medical Association was held at the Colon Hospital on the Atlantic side, Tuesday, October 28th, at 8 p. m. As a rule these meetings are held at the Ancon Hospital on the Pacific side, but out of courtesy to the Atlantic side physicians, the meeting was this time held in Colon.

The following interesting program was presented by the staff of the hospital: 1. Report of a Case of Multiple Lacerated Wounds Resulting from Attack by a Barracuda. 2. Report of a Case of Perthes Disease with Discussion of This and Allied Bone Conditions, by Major T. S. Mebane; discussion opened by Dr. R. W. Runyan. 3. Report of a Case of Ulcerative Endocarditis, by Dr. W. F. Hamilton; discussion opened by Lieut. Colonel Roger Brooke. 4. Preliminary Report of Four Cases of Chronic Gonorrhea Treated with Muecurchrome, by Captain Frank Romaine; discussion opened by Dr. C. Holmes. 5. Report of the delegates to the meeting of the American Medical Association.

The most interesting report of the evening was that of the barracuda bite. A brief history of the case is as follows: An enlisted man, about twenty-six years of age, was swimming 200 yards off shore in the Atlantic Ocean when he was suddenly attacked by a large fish. During the struggle a greater part of the muscles of the calf of his leg were torn away and numerous lacerations made in the thigh. Through almost superhuman strength the man was able to free himself from the attacks of the fish and was finally rescued by two companions in a boat. Several bloodvessels had been cut and when rescued the man was in a state of collapse due to loss of blood. A tourniquet was applied to stop hemorrhage and the man was rushed to the hospital. He was immediately operated upon and made a slow but uneventful recovery. Even with the loss of a great deal of muscle structure the leg now functions well and the man has been returned to active duty. This case illustrates the ever present danger of swimming far out in tropical waters, where sharks and other large fish abound. Such attacks on human beings are not common in the water adjacent to Panama. Barracudas and sharks abound and many people go in swimming, yet in seven years only three other instances of similar attacks have come under the observation of the Canal Zone hospital authorities. Two of these attacks were made by alligators and the third by a shark.

GORGAS DAY IN THE CANAL ZONE

The following announcement has been made by Colonel M. L. Walker, Governor of the Pamana Canal:

A movement is now under way to establish and maintain a research laboratory on the Isthmus as a permanent tribute to the memory of Doctor William Crawford Gorgas. The laboratory, which will be managed by leaders of medical science, will be used for research work in the prevention of disease.

Doctor Gorgas' achievements in the cause of disease eradication are too well known here to require recounting, except to say that the sanitary measures advocated and enforced by him contributed largely to the successful completion of the Panama Canal. No more appropriate tribute could be rendered to the memory of this great man of science than that of perpetuating his memory and ideals in an institution dedicated to the great work on which he was engaged.

A campaign, which has the hearty endorsement of the Canal Zone Government, is being conducted to raise funds necessary for the purpose. It seems fitting therefore that a special day should be named on which the health principles advocated by Doctor Gorgas may be given the serious consideration which they deserve.

Accordingly, Sunday, November 16, 1924, is announced as Gorgas Day. All are asked to cooperate in giving emphasis on that day, by whatever means may be available, to the relation between health and good citizenship, and to the vital importance of continuing the researches of medical science in the hope that at some not far distant day the ravages of disease in the world may be conquered.

SANTO TOMAS HOSPITAL SUPERINTENDENT RESIGNS

On account of official order from the Secretary of War, Major Edgar A. Bocock, Medical Corps, U. S. A., has resigned as head of the Santo Tomas Hospital, Panama, and has left for the United States, where he is assigned to duty. Under a new arrangement, a Panaman physician has been appointed superintendent by the President of Panama.

Book Reviews

PEDIATRICS

Pediatrics. By Various Authors. Edited by Isaac A. Abt, M.D., Chicago. Volume IV, with 218 Illustrations. Philadelphia and London: W. B. Saunders Company, 1924. Pp. xii-1271.

This volume includes chapters on diseases of the thoracic organs, surgery of the thorax, the physiology of the circulation, diseases of the heart, bloodvessels and the blood, an exhaustive study of electrocardiography, the transfusion of blood, diseases of the endocrine glands, and diseases of the lymph nodes, each of which is discussed by an authority on the subject. The last word on the subject of endocrinology may be found here. Much space is devoted to discussion of diseases and conditions of the urinary tract. The male and female genital organs and their diseases in childhood are discussed in detail.

The bibliography is extensive, but it is unfortunate that some of the more recent literature is not cited, which is an inherent fault of all large systems of medicine. The historical aspect of medicine is given ample consideration. The physiological aspect of the study of disease is discussed in detail and applied to the diseases of childhood. The entire volume presents an exhaustive study of the subjects treated. It is an addition of distinct value to the department of pediatrics.

DISEASES OF CHILDREN

Lehrbuch der Kinderheilkunde für Arzte und Studierende. Von. Dr. med. Bernhard Bendix, a. d. Achte Auflage, mit 93 Abbildungen im Texte und 7 Farbigen Tafeln. Berlin und Wien: Urban & Schwarzenberg, 1923. Pp. xii-639.

In order to make this, the eighth revised edition of this book, of the most practical value to medical students and practitioners of medicine, special emphasis is laid upon the clinical aspects of pediatrics and therapy. It has been translated into the Italian, Russian, and Spanish languages. Pathology in pediatrics has been left in the background. The introductory chapter deals with the development and hygiene of the healthy infant and child and the treatment of the sick child in general. The most important diseases of the newborn are treated in a separate chapter. General diseases, including diseases of the blood and hematopoietic organs, the hemorrhagic diathesis, constitutional anomalies, and diseases of metabolism are taken up in one chapter. The chapter on the diseases of the digestive organs, including the various forms of malnutrition is replete with practical suggestions of a dietetic nature: detailed instruction is given regarding the different forms of artificial feeding. However, the subject of vitamines, which promises to play a very important part in the future, is not given sufficient attention. The diseases of the respiratory and circulatory systems, respectively, are also discussed. The diseases of the urogenital apparatus and of the nervous system are taken up in greater detail than is usual in textbooks on pediatrics. The infectious diseases and the diseases of the skin are also discussed in great detail. The bibliography is extensive but not complete or up to date, as much of the more recent and important literature is omitted and there are few references to authors other than German.

RADIOTHERAPY IN CHILDREN'S DISEASES

Strahlenbehandlung bei Kinderkrankheiten. Von Prof. Dr. W. Birk, und Dr. L. Schall. Mit 13 Figuren im Text und auf 2 Tafeln. Berlin, Wien: Urban & Schwarzenberg, 1924. Pp. vi-77.

This monograph is presented as the first on the subject of ultraviolet (quartz lamp) therapy and röntgenotherapy as applied in the diseases of children. Not only is the technic of irradiation described in detail, but also the clinical reasons for the treatment, as the authors determined them in their observations and experiments over a period of many years.

The first part deals with the application of quartz lamp therapy in rachitis, spasmophilia, the various forms of tuberculosis in children, and also in other diseases of children, such as erysipelas, pertussis, varicella, chronic infiltrating eczema, bronchial asthma and in enuresis nocturna.

The second part is devoted to röntgenotherapy and includes the technic of the treatment of the various types of tuberculosis occurring in children, of endocrine disturbances (thymus, thyroid, hypophysis and suprarenal glands), of the blood and hematopoietic organs (leucemias, pseudoleucemias, splenomegalies and the hemorrhagic diathesis), and of the exudative diathesis (chronic eczema, bronchial asthma and hypertrophy of the pharyngeal lymphatic ring). The final chapter deals with the röntgen ray injuries.

BOOK FOR YOUNG MOTHERS

The Happy Baby. Editorial Adviser: L. Emmet Holt, M.D. New York: Dodd, Mead & Company, 1924. Pp. 120.

"We can have better health for ourselves and our children if we will. Physicians who are interested in this campaign for saving child life and improving child health believe the greatest weapon against disease is not medicine but knowledge—accurate, definite knowledge applied with common sense." In these words Dr. Holt in the introduction to this little book for mothers, particularly those who are mothers for the first time, summarizes his purpose in writing and editing it. He himself is the writer of several of the chapters on general and special problems of infant care, and other sections are included. Harvey J. Burkhart, Ralph Lobenstine, and Henry L. K. Shaw. The articles are among those originally published in the Happy Child Department of the *Delineator*, for which Dr. Holt was for some time the editorial adviser. Among the chapter headings are the General Care of the Baby, Care of the Expectant Mother and the New Baby, Maternal Nursing, Artificial Feeding, Diet Problems of Childhood, Early Childhood, The Child's Teeth. These various topics are treated in simple, nontechnical language, so that even the mothers with little or no education may grasp them easily. Discussions and advice as to

psychological as well as physical states and symptoms of both mother and child are included, necessary supplies are listed, food formulas are tabulated, and many other practical hints and suggestions are given which are too often omitted in similar works.

INFANT FEEDING

Physiopathologie de L'Appareil Digestif du Nourrisson. Par Enrique Suner. Préface du Dr. Nobécourt. Traduction du Dr. Mathé. Paris: Masson et Cie, 1924. Pp. 89.

This pamphlet of ninety pages by Dr. Enrique Suner, professor of pediatrics at the University of Madrid, is translated into French by Dr. Mathé. Beginning with a discussion of digestion in general, there are taken up in order such topics as the influence of bacteria on intestinal digestion, the transformation of the principal foodstuffs, the composition of the protein molecule, energy requirements in the nursling, calorimetry, individualization in artificial feeding, milk dilution, supplementary feeding, determination of calorimetric values by simple rules, the Pirquet system, etc.

On the whole the little book presents a serviceable review of our present day knowledge of infant feeding.

DISEASES OF CHILDHOOD

Säuglingsheilkunde der täglischen Praxis. (Mit einzelnen Hinweisen auf das spätere Kindesalter). Von Prof. Dr. K. Blühdorn, Göttingen. Berlin, Wien: Urban & Schwarzenberg, 1924. Pp. viii-190.

Clinique Médicale des Enfants. Affections de L'Appareil Respiratoire. By P. Nobécourt. Paris: Masson et Cie., 1924. Pp. 348.

Blühdorn's handbook consists of a number of articles on pediatric subjects with reference to the disease of childhood, formerly published in the *Medizinische Klinik,* but which are now published in an amplified form. It is intended for daily use by the practitioner and student and the subjects are treated in a practical manner. Theory is mentioned when it is applicable in practice. The arrangement of the material is rather desultory and follows the principle of utility in differential diagnosis. Only the most important features are discussed in detail, but nothing of practical importance and of specific application in infancy is omitted.

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The respiratory system of infancy is dealt with by P. Nobécourt in this, the first volume of several publications which will appear in a series. As the title indicates, the book treats of the diseases of the respiratory system in children. It gives the history, the method of examination, diagnosis, differential diagnosis, and the treatment. The subjects are taken up in detail and the book will be helpful to student and practitioner alike. It will be of assistance in avoiding the mistakes so often made because the little patient is unable to designate localization of pain, or discomfort, and the symptoms and signs are too often indefinite.

Not only the general practitioner but the specialist also will find valuable hints in this interesting volume and the reviewer expresses the hope that some of our eminent American specialists in diseases of children will find it worth while to translate this work by Prof. Nobécourt.

AN ATLAS OF SKIN DISEASES

Atlas und Grundriss der Hautkrankheiten. Fünfte, teilweise umgearbeitete und erwiterte Auflage. Von A. Jesionek und Dr. Mravek. Herausgegeben von Dr. med. Paul Mulzer. Mit 109 farbigen Abbildungen auf 52 Tafeln und 85 Textbildern. Lehmann's Medizinsche Atlanten, Band XV. München: J. F. Lehmann's Verlag, 1924.

This volume is one of the series of medical atlases published by Lehmann. It consists of 254 pages, including text and illustrations. The text is the work of three writers who are responsible for the successive editions. As the basis of this is from the pen of the late Professor Mracek it is excellent and authoritative. As the volume is principally classed as an atlas its value must be largely judged by the quality of the illustrations. The latter consist of fifty-two plates containing one hundred and nine colored illustrations and in addition eighty-five black and white photographs scattered through the text. Of the colored plates some are reproduced from wax models and others from oil paintings or water colors. A few of them are excellent, some fairly good and others are so poor that a proper diagnosis could not be made by the most expert dermatologist. There is no excuse for making illustrations at the present date from paintings when much more accurate reproductions can be made from photographs or wax models. The black and white illustrations from photographs, while not of very high quality, are fairly good. The volume is of little value to the specialist and as an atlas is not worthy of recommendation to the general practitioner.

ANGINA

Angina Pectoris. By Sir James Mackenzie, M.D., F.R.S., F.R.C.P. Oxford Medical Publication. London: Henry Frowde and Hodder and Stoughton, 1924. Pp. 253.

The views of Sir James Mackenzie on angina pectoris are well known and in this book he presents them with force and clarity. Whether or not one agrees with him, one cannot read the volume without gaining much food for reflection, as well as intellectual stimulation, from his careful clinical observations and lucid thought. Mackenzie's thesis is that angina pectoris is a symptom caused by exhaustion of the heart muscle, which is experienced to a different degree by different individuals depending on the sensitiveness of their nervous systems. The same mechanism is believed to explain all heart pain —there is no pain peculiar to angina—but the significance of the pain is determined by the circumstances under which it arises. His approach to the problem is through a study of pain and its physiological mechanism. He first presents his well known studies on referred pain and discusses their application to the subject in hand. He points out that visceral pain is produced by the contraction of muscle, particularly of smooth muscle; and while he concedes that heart pain cannot be produced by a "spasm of the heart," he believes that the cardiac muscle can produce pain when it is confronted with work greater than it can readily overcome, and that this pain arises through a summation of stimuli. He recalls that voluntary muscle, forced to contract when its blood supply is deficient, gives rise to pain, and by analogy explains the pain of angina pectoris as due to contraction of the heart muscle under an inadequate

blood supply. This would explan the association of coronary artery disease with angina pectoris as well as the fact that the pain usually comes on after effort. Other causes of exhaustion of the heart may, however, be at fault. Secondary angina pectoris is explained by a hypersensitive nervous system in which a weak stimulus, which, in a normal person, would be unperceived, such as, for instance, the natural increase in strength and rate of the heart beat after exercise, gives rise to sensations similar to those following severe cardiac exhaustion in non-sensitive individuals. In other words, pain and the associated symptoms depend on, 1, the strength of the stimulus, 2, the susceptibility of the nervous system. Fundamentally Mackenzie's point of view is as follows: Angina pectoris is a symptom of heart failure. "The symptoms of heart failure are produced in two ways, first, by the organs, which receive an insufficient amount of blood, secondly, by the exhaustion of the heart muscle. In the second of these ways the heart muscle gives rise to the symptoms and they are not shown by the heart, but are made manifest through the intervention of the nervous system, giving rise to pain in varying degrees and other signs of nerve stimulation, such as those that are included under the term angina pectoris." An interesting and instructive series of 160 case records are appended to the text. Every clinician will benefit by a careful study of the book.

PATHOLOGY

Pathological Technique. A Practical Manual for Workers in Pathological Histology and Bacteriology, Including Directions for the Performance of Autopsies and for Clinical Diagnosis by Laboratory Methods. By Frank B. Mallory, M.D., and James B. Wright, M.D. Eighth Edition, revised and enlarged. With 180 illustrations. Philadelphia and London: W. B. Saunders Co., 1924. Pp. 666.

Since its first appearance, nearly thirty years ago, this work has been standard. Its popularity will be enhanced by the present edition. Originally designed especially for practical use in pathological laboratories, both as a guide to beginners and as a source of reference to the advanced, it more than fulfills its promise. There has been a thorough revision of the sections and chapters devoted to bacteriology, serum diagnosis, the blood, examination of the spinal fluid. Other sections which have been rewritten include the essentials of photomicrography, pigments, fats, and lipoids, and museum preparations. A valuable feature to this reviewer is the introductory table of contents which allows a clear survey of the work as well as reference to any desired topic.

OTOLARYNGOLOGY

Clinic et Iconographie Medico-Chirurgicales des Maladies de la Face et du Cou. Par Henri Aboulker. Preface du Professeur Pierre Sebileau. 420 Photogravures. Deuxieme Edition. Paris: A Maloine et Fils, 1924.

This is the second edition of an interesting collection of clinical cases by a man who has evidently had an extensive experience in the surgery of the ear, nose and throat and adjacent regions. The method of exposition is essentially practical, devoid of dogmatism. The aim is to have the reader follow the author through the history, symptomatology and treatment of the case. The field covered by the author is wide, from the extraction of foreign bodies from the external auditory canal to major operations on the brain. What may be of special interest to the American reader is the author's warm advocacy of local (infiltration) anesthesia as a method of choice in every case. The clinical portion of the book is supplemented by a remarkable collection of over four hundred photographs of diseases of the ear, nose and throat. Unfortunately many of them are poorly executed.

The otolaryngologist reading French will find this collection of clinical cases of great interest, both from the variety of pathological conditions presented, and the vigorous and convincing style with which they are discussed.

LEUCOCYTIC FERMENTS

Les Ferments des Leucocytes en Physiologie, Pathologie et Thérapeutique Générales. Noël Fiessinger. Paris: Masson et Cie., 1923.

This is an admirable summary of all that we know about leucocytic ferments. As the author himself has contributed a great deal to the subject, he writes of it with an intimate knowledge. The book should be translated, so that it will be available to those who are not familiar with French.

MEMOIRS

Besonnte Ergangenheit. By Dr. Karl Ludwig Schleich. Berlin: Ernst Rowohlt, 1923.

Karl Ludwig Schleich, who introduced into medical science in 1894 infiltration anesthesia, has recently published his memoirs; but, although Schleich is one of the most famous German surgeons of his day, these memoirs deal chiefly with the interests and ambitions of the artist whom the author in his youth wished to become. He is also a poet of no small ability, as his recently published poems reveal. He considered for a time becoming an operatic singer for he had a good voice, a pleasing personality and considerable talent as an actor.

His book, however, touches upon many subjects and incidents of interest to medical literature. He believes that the idea of his method of local anesthesia came to him as a direct "inspiration"; he had his first clue to the idea during a conversation with the famous young Polish pianist and psychologist, Stanislas Przybzsewski, whose mysterious disappearance has never been solved. They were discussing methods of softening the notes from piano strings, and later investigations along these lines resulted in the perfection of his method of anesthesia. It was ten long years, however, before the virtue of this was acknowledged by the profession. Schleich's closest friends in his youth were August Strindberg and Richard Dehmel. He tells us of the former's investigations into the nervous systems of plants, and of his discoveries relating to the functions of the ganglia cells of plants, subsequently confirmed by the studies of the great botanist, Reinke. He tells us that Strinberg made also many experiments in alchemy, and succeeded, in his search for gold, in producing a metal which the scientists of the day were unable to analyze.

It is to be hoped that an English translation of this interesting and important work will soon be forthcoming.

PSYCHOLOGICAL STUDIES

Taking the Literary Pulse. Psychological Studies of Life and Letters. By Joseph Collins. New York: George H. Doran Company, 1924. Pp. 317.

One can make a wide acquaintance with many writers through Collins's studies. It is a disappointing acquaintance, however, in many respects. One looks, in the first place, for more profoundly enlightening psychological meanings to the works discussed than Collins takes the trouble to give. True and deep analyses of characters and situations, or what they represent in the personalities of their creators, are not given. There is scoffing criticism, not infrequently, of the psychology, chiefly the Freudian, which it is assumed the author is trying to represent. There is no deep search for the actual pulse beat of the human conflicts which seek means of expression. One cannot help feeling that Collins has missed an opportunity to stir his readers to thought upon the great psychic unrest which underlies the vast output of literature. As it is, the book deals with this so superficially that its psychology does not justify the wide range of often mediocre literary material set forth.

CARE OF THE HEART

How Is Your Heart? Intimate Talks on the Prevention of Heart Disease and on the Care of an Already Damaged Heart. By S. Calvin Smith, M.S., M.D. New York: Boni and Liveright, 1924. Pp. 208.

This book by Dr. Smith is designed for the laity, in particular for individuals suffering from heart disease. Written in a breezy, colloquial style, and withal with accuracy and clarity, it should find a wide circle of readers. The last three chapters covering "How to live when damage is already done," "Appropriate exercise for heart patients" and "Appropriate occupations for heart patients" are particularly good.

The physician can well recommend the book to his patients; but in the opinion of the reviewer, he would be wise to caution the reader that Dr. Smith's views on the importance of focal infections in the development of heart disease, in particular on the great peril that he believes may lurk in the teeth and tonsils, are unduly magnified.

On page 69 the author, by a slip of the pen, speaks of typhoid antitoxin instead of vaccine.

SCIENCE OF THE FUTURE

Dædalus or Science and the Future. A Paper Read to the Heretics, Cambridge on February 4th, 1923. By J. B. S. Haldane. Today and Tomorrow Series. New York: E. P. Dutton & Company. 1924. Pp. v, 93.

Haldane speaks to minds already heretic or to those afraid to venture into courageous thought of the future. He stimulates his readers to face appalling facts of danger inherent in the science of the present and the possibilities—scarcely less appalling because of their newness and their daring—with which he looks into a course of constructive activity for the generations to come. As the author points these out, they lie in territories, they belong to conceptions that exceed the accepted limits of the conventional thought of the day. They demand reversal of æsthetic, yes, even moral, appreciation. Yet such change, we are reminded, has taken place before even in those greater matters which now lie as the bedrock of our social customs. These became accepted so long before the present era of civilized humanity that things which could be found offensive in themselves have long been quite otherwise regarded. The basis of our advance, through the practical measures which this broad visioned scientist foresees, or through the intellectual and æsthetic life which will accompany these, is a reëducation; an appreciation of what the medium of future culture is to be. Science, especially the wonder world of biology, scarcely yet touched, is to be the material of artist and poet. In science lies the menace to civilization; in science therefore must be its next sphere of salvation.

REVOLUTION

A Week. By Iury Libedinsky. Translated by Arthur Ransome. New York: B. W. Huebsch, 1923.

Wine of Fury. By Leigh Rogers. New York: Alfred A. Knopf, 1924.

An Outlaw's Diary. By Cécile Tormay. Vol. I, Revolution; Vol. II, The Commune. New York: Robert M. McBride and Company, 1924.

The literature of revolution is being written. Already a novel of New Russia has struck a note of understanding the world over. In his great book of slim proportions, *A Week*, Libedinsky has chosen for the universal crisis just one short week in an outlying town of Russia. The contacts with current events that each one of the characters has, furnishes all that is necessary of the past. The assortment of types and beliefs to be found everywhere, are seemingly picked out at random here. The gigantic clash between the old and the new, the ramifications of Soviet government, the steady ununderstanding opposition, and the dogged pursuit of an ideal that inspires every worker for the new beliefs, are thrown into dramatic relief against this background of everyday life in the provinces. In the fewest words, without adornment, nothing but pure elements, Libedinsky creates an enduring, pulsing week that sears memory without destroying hope.

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In Petrograd the tale of the revolution follows more conventional models in an interesting novel, Leigh Rogers's *Wine of Fury*. Especially is the effect upon a disinterested spectator emphasized. An American bank manager with the slightest knowledge of the purposes and thought of the vast country into which he is thrown, still in the turmoil of the revolution, applies American made ideas and ideals. He wades through gore, as it were, with always his own goal only in sight. He loves a Russian girl; his emotions are constantly within a fraction of plunging him unresisting into the whirlpool that seethes about him, and yet he continues through his days and nights, scarcely aware of how close he is to the brink. The American consciousness settles over him. Maybe it ruins his life—his real life. His business life it assures.

The picture of the revolution is frightful and realistic. No one has the right to say whether it is overdrawn. We have too much of David Rand's "American consciousness" to be willing to accept unquestioningly the things that are there and that do not even bear their full import to *his* mind. Rogers has given us a history of fact, a dramatic

conflict of emotion, a solution that, like life or death, is no solution, but only the next step onwards.

* * *

Turning to Hungary and the revolution that tormented that unhappy land, we get nothing but horror. In the overwhelming emotions that Cécile Tormay records from day to day there is only vindictiveness. It is to be expected that so close to the battle front violent reactions spring to mind. *An Outlaw's Diary* is a burst of hysterical feeling tempered not at all by any perception of the "other man's" point of view. A royalist, she does not hesitate to stress and restress the bestiality, the executionary fervor of the party in power. But she incautiously notes that many of the executioners of the red régime were themselves destroyed as soon as the royalists seized power again. And so it goes the world over. "Me and Mine" is still the foremost interest.

One is much more impressed with the restraint and fairness in the first two books than with the personal sufferings, acute as they may have been, of Miss Tormay.

A FRAGMENT

Ariel. The Life of Shelley. By André Maurois. Translated by Ella D'Arcy. New York: D. Appleton and Company, 1924. Pp. 336.

Over the dry bones of contemporary history, the sinews of half alive letters, Maurois has created his Ariel. The life of Shelley exhales at least the essence of one man's dream.

The figures surrounding Shelley come very close to us. He, the erratic, the childlike, with his perpetual return to the nursery triangle, nevertheless stands out a far more vivid figure than ever before. There is no mention of his work in the biography. Yet the spirit of it has given the breath of life to Maurois's hero.

OLD NEW YORK

Old New York. False Dawn—The 'Forties; The Old Maid—The 'Fifties; The Spark—The 'Sixties; New Year's Day—The 'Seventies. By Edith Wharton. New York and London: D. Appleton and Company, 1924. Pp. 143-191-109-160.

Edith Wharton's four short novels, uneven as they are in substance, nevetheless succeed in their aim of giving historical flavor to a study of times long past.

False Dawn has the hackneyed theme of a prophet unrecognized in his own time. *The Old Maid* is the best of the stories, a powerful bit of lift,—two women and a daughter. An intricate, marvelous design that recalls the absorbing cruelty of *Ethan Frome*. A solution that admits of a hundred possibilities, and none. A story to make the possession of the whole set immensely worth while.

The Spark employs again a device used in the first story, acquaintance with a great man, in the first instance Poe, in the second, Walt Whitman. The easygoing man with the wildcat wife flares into action with the spark of remembrance of the ideas of the rough gentlehanded man who nursed him during the civil war. Though the ideals shape his life he is shy of meeting them face to face. Respectability versus reality—and the conventional the inevitable winner!

New Year's Day is the story of a woman who sells herself to provide a loved husband with necessities in his illness. She courts ostracism, yet she is absolutely true to herself. More than anything, the story comments on the limited field of enterprise open to women in the last century.

Medicoliterary Notes.

The Yellow Dragon, by Arthur Mills (London, Hutchinson), is a "real thriller" for a winter's night by the fire. It is a picturesque yarn of China, with a mysterious Chinese villain playing against several Britishers.

* * *

A London newspaper reports that so great has become the automobile peril in that erstwhile land of quiet lanes and remote byways, that people walking at night on busy highways wear over their shoulders small red glass disks that reflect the lights of automobiles approaching from behind, thus indicating to the drivers that a pedestrian is ahead on the road.

* * *

The cultivated strawberries now grown in Europe and America owe their size to their Chilean ancestors. Up to 1714, large fruited strawberries were not known in Europe, the native berries being small but of good flavor. In that year, a Frenchman brought plants from Chile. These were crossed with native varieties and with the Virginia strawberry introduced into Europe early in the previous century. By this crossing, plants were developed which combined large size with delicate flavor.—*New York Times.*

* * *

The New School for Social Research of New York City is offering this year a number of practical courses. In addition to that on applied psychology previously mentioned in this column, a course on evolutionary biology was given in October by Julian Huxley, of Oxford University; other lecturers are Dr. Frankwood E. Williams, medical director of the National Committee for Mental Hygiene; Dr. Douglas Thom, Dr. Bernard Glueck, Alexander A. Goldenweiser and Joseph K. Hart.

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According to press reports from Paris, from now on divorce seeking spouses will have to stage their last fights outside the walls of the Palais de Justice. It seems that from time immemorial the men's and women's waiting rooms of this court have been the scenes of warring couples, staging a last conflict for marital rights and incidentally affronting the dignity of the Law, which was powerless to separate them, to say nothing of having other things to do. So the Law has had erected between these waiting rooms in the divorce section of the courts great iron grill work gates, the keys of which are entrusted to an attendant whose business it is to discriminate wisely.

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The *Almanach de Gotha,* apparently in despair over the recent debacle of royal crowns in Europe, has turned to Asia and Africa, and in its latest edition shows that there are still some sovereigns left. Japan, which until 1922 was relegated to the section of the Almanach devoted merely to high officials and statistics, now has its royal family listed among the best, as is the case with other Asiatic rulers, once given second rank, such as the King of Siam and the Sultan of Zanzibar. For some strange reason, the Sultan of Turkey has always been listed among European royalty. From such high estate has fallen the publication which once dared to ignore the great Napoleon as an upstart unworthy of mention!

* * *

Hope and love—not lust—and reverence for human nature the essential parts of romanticism, are greatly needed in postwar England. No such signs of spiritual revival are clearly traceable in the chaos and babel the war has left behind. "We see not our tokens; there is not one prophet more." Perhaps he is among us somewhere, unknown; he may be a schoolboy or an apprentice. When he comes I am disposed to think that he will choose to speak to his generation neither from the pulpit, nor from the platform, nor

from the printed page, but from the stage. A great dramatist might help us to find our souls.—*Dean Inge of St. Paul's, in the Morning Post.*

* * *

A remarkable collection of Nelson papers, extensive enough to fill fifteen folio volumes, has recently come to light. They contain material relating to the victualing of Nelson's Mediterranean fleet during the Napoleonic Wars, and medical reports upon the condition of the men. Nelson was a zealous advocate of fresh provisions at sea, and the papers just discovered give the actual number of oxen bought, how much beef they yielded, and the number of pounds of onions and other vegetables and of oranges and lemons supplied to the six thousand men that manned Nelson's ships. Beef cost about eight cents a pound, and wine about twenty-five cents a gallon. Apparently only a small quantity of salt provisions was consumed. There was one short outbreak of scurvy in the winter of 1804-5, when the Spanish market for provisions was temporarily closed, but in general the health of the men was uniformly good. The chief diseases, besides the scurvy already mentioned, were fevers and lung diseases. There was a good deal of rheumatism, probably the feverish colds reported were influenza. The highest number of sick cases at any one time was 268. The average was below 200, and the deaths on board ship were about one per cent. per annum.—*Living Age.*

* * *

In a recent issue of the *New York Times,* Joseph B. Gilder writes an interesting account of *Folk Who Have Lived More Than a Century.* The writer states that for several years he has been keeping tab on centenarians. He outlines for us the career of Thomas Parr, the most famous of England's old men, who supposedly died at the age of 148, and upon whose remains Harvey was permitted to make an autopsy, discovering the organs to have been in a most remarkable state of preservation. But China can go England one better, for, according to tax records in that country, she now has one Yuan Kwo-chang who is approaching his 164th birthday. Josef Maga of Yugoslavia died this year at the age of 120. He became a father at 103. At about the same time died at the age of 117 James G. Sutton, of West Virginia, fellow citizen of John W. Davis, smoker and chewer of tobacco, but teetotaler. Among New Yorkers of advanced age is "case 15" in whom the United Hebrew Charities take a special interest because he has been an orphan for 105 years. He is still active and alert and earns a little by "visiting the sick and sitting up with the dead."

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A good story with a psychopathological background is *Grievously Vexed* by Chris Sewell, reprinted in the *Living Age* for September 27 from the *English Review.*

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All Rome is making elaborate preparations for the coming of the pilgrims in celebration of this jubilee year. New stores selling religious emblems and articles are being opened near St. Peter's, traffic improvements are being planned, streets and squares are being repaved and widened, rents are being doubled, tenants are being evicted to make room for better paying guests, hotels and boarding houses are being renovated, to celebrate the holy year instituted in 1300 by Boniface VIII. Dante was one of the first to come on that occasion.

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As a result of the recent interchange of public health officers under League of Nations' auspices, it has been decided to establish an international society open to all medical officers of health who are taking part in the various interchanges organized by the League. A provisional committee composed of members from the leading countries of Europe will draw up a constitution for the organization, which will have its headquarters at Geneva and will act as a medium of exchange information on all matters of public health.

* * *

Lovers of London will be glad to know that a new type of souvenir volume has arisen to take the place of postcards and strings of shiny photographs between red covers. This is *The Artist's London,* published by John Castle, and containing eight contemporary pictures by leading artists, prefaced by four essays on various characteristic aspects of the city and her life. Drinkwater discourses on London fogs, Wilfred Whitten writes about the city's links with the past, and, if the reproductions of the pictures are somewhat disappointing, the book is as a whole what the *English Review* calls it—"a jolly record of London and London life and types, excellently produced."

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German red tape seems to be still functioning. When the dramatist, Ernst Toller, recently arrived in Leipzig after a five years' sojourn in a Bavarian prison, he was at once arrested by order of the chief of police of that city. It was explained to him at the police court that he was arrested under an order sent from Munich in 1919. He was immediately released when the ignorant chief of police was informed that he had already served a five year sentence.

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About 4600 B.C. a public dispensary was established in Egypt, the medical attendant for which received the equivalent of $500 a year for his services. This was at that time about five times the amount received by a skilled laborer.

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At the International Town Planning Conference held at Amsterdam, Holland, in July, one of the features was the study clubs conducted by H. V. Hubbard, professor of landscape architecture at Harvard. Among the topics discussed at the meetings were industrial and housing areas, drainage, transportation, parks, and recreation.

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An important recent publication of Dutton is *Race Prejudice* by Jean Finot, translated from the French.

* * *

Anthologie des Ecrivains Morts à la Guerre is the title of a four volume work to be issued in Paris by the Association des Ecrivains Combattants, the first volume of which has recently been published. This includes representative excerpts from the works of 450 French writers who lost their lives in the World War. Each selection is preceded by biographical notes and a bibliography. The introduction states that poets, romancers, dramatists, journalists, historians, geographers, philosophers, exegetists, archeologists, and even those who had scarcely begun to follow in the footsteps of their elders, will be included without distinction, no matter what their opinions or beliefs.

* * *

Dr. Methodi Popoff, professor in the University of Sofia and Bulgarian Ambassador to Berlin, lays claim to having increased the yields of many crops, including cotton, cereals and tobacco, by from twenty to fifty per cent. by a process of chemical treatment of the seed. He has used various stimulants, such as magnesium chloride and a number of metallic salts which are poisonous to vegetable as well as to animal life when taken in large quantities. He immerses the seeds in the proper chemical solution, leaving them there for a fixed time. If left too long, the seed life is destroyed; if not long enough, the chemical is ineffective.

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Booksellers report that the translated works of D. H. Lawrence are so much in demand in Germany that it looks as though he is destined to become the interpreter of the British to literary Germany. Germany now has a Saint Joan of her own,—*Gilles and Jeanne,* a play by Georg Kaiser, now being produced at the Dramatisches Theater in Berlin. The reviews attribute to it a very "Freudian" view point and treatment, and seem to indicate that the playwright has taken many liberties with historical facts. Kaiser, now more than fifty, continues to produce two interesting and entertaining plays each year.

* * *

Prof. Morris Lecot, of the University of Louvain, has recently been at work on a bibliography of books about Einstein and relativity. He has found the number to be 3,775, only 435 of which have been published in Germany. England has contributed 1,150, France 690, Italy 215, and Holland 126.

* * *

Recent books of interest are *The Little Girl,* published in Great Britain under the title *Something Childish,* a posthumous volume of stories by Katherine Mansfield (Knopf); and *Anatole France, Politique et Poète,* by Charles Maurras (Paris, Plon).

Abstracts from Current Literature

PEDIATRICS

Heredity and Diseases of Childhood.—Charles Herrman (*Archives of Pediatrics,* May, 1924) states that the subject of heredity has not been given the attention which it deserves. Unfavorable peculiarities and tendencies are handled early in childhood in order to prevent their further development. The inheritance of physical and mental peculiarities apparently follow the same laws. For the proper study of the laws of inheritance, complete family histories and pedigree charts are essential.

Tendencies and peculiarities, although on a hereditary basis and congenital, may not manifest themselves at birth, but may develop later when the individual is called to bear an increased burden, as a result of improper feeding, unfavorable environment, infection, or psychical shock. Inherited tendencies may manifest themselves in the appearance of one or more of a group of related conditions, in the vulnerability of a certain organ or system, or in the appearance of congenital deformities. Good health and nutrition do not necessarily go hand in hand with resistance to infectious diseases. The ability to develop active immunity appears to be distinct for each infectious disease, and is probably on a hereditary basis. The ability to develop antitoxin in diphtheria acts as a dominant factor. The germ plasm, although a part, is distinct from and to a great extent independent of the organism itself.

The normal intact placenta acts as an efficient barrier against the transmission of injurious substances to the fetus. In twins we have the best opportunity to study the relative importance of heredity and environment in the development of human beings. Acquired characteristics are not inherited. The environment may, however, modify, hasten, retard, or inhibit the development of latent qualities. Prenatal care of the mother, although of great value, has definite limitations as far as the development of the fetus is concerned.

We can treat syphilis in the mother, detect disturbances in renal function, and pelvic deformities, but certain fundamental defects, which have their origin in the germ plasm, cannot be influenced. At present only the worst kind of mating can be prevented by law. The best can be encouraged. In addition to the present restriction of foreign parentage in numbers, an intelligent selection of immigrants should be made abroad.

Diagnosis and Treatment of Pyelitis in Infancy and Childhood.—Rowland G. Freeman (*Archives of Pediatrics,* March, 1924) states that a diagnosis of pyelitis should always be confirmed by a bacteriological examination of the urine. Catheterization in the female is not necessary and the urine may be obtained for such examination by the following procedure: The labia of the child should be separted and **the vulva carefully washed** with soapy water, rinsed with clear water and dried with a clean towel. The urine should be passed into a vessel that has been rinsed with boiling water, put into sterile bottles with corks that have been sterilized, kept cold until planted, and planted as soon as possible. Such urine when intelligently collected has a negligible external contamination. The treatment should be aided by proper regulation of the diet and by testing the reaction of all urine passed. The child should be considered cured only when pus has disappeared from the urine and when a sterile specimen of urine has been obtained.

Pyelitis in Infancy and Childhood.—H. J. Gerstenberger and S. A. Wahl (*Ohio State Medical Journal,* June 1, 1924) write that the term pyelitis at the present time really includes inflammation in one or more of the following locations—bladder, ureter, kidney pelvis and the kidney itself. Erratic change of disposition is one of the outstanding symptoms and one that should direct our attention to an investigation of the urinary tract. Fever is present in almost every case, while the same is true of socalled dyspepsia, which may be parenteral from the urinary tract, or may, on the other hand, be the primary and predisposing factor in the production of the pyelitis. Vomiting is common but subjective pain is rare, although in many cases one can make out tenderness in the renal region in the back. Chills, in the writer's experience, are not common symptoms nor can the kidney be palpated. Pus in the urine is after all the only pathognomonic symptom and in a typical case many leucocytes may be found with the low power of the microscope either clumped or separate. As to treatment there are two main drugs advocated, namely, urotropin with acid sodium phosphate on the one hand, and potassium citrate or the alkaline treatment on the other. The latter is preferred by the authors and they give twenty grains of potassium citrate every hour for six doses; every two hours for two or three days; every four hours for five or six days more, and then four times a day during convalescence.

Bacterial Content of the Urine in Children, with Special Reference to Pyelitis. — W. Morgan Hartshorn (*Archives of Pediatrics,* March, 1924) found that in healthy children the urine is free from bacteria in at least one half of the cases. Cultural growth in specimens obtained with sterile precautions is slightly in excess of that obtained by catheterization. For bacteriological examination of the urine, catheterized specimens are desirable but not essential for practical purposes. Children suffering from pyelitis should not be discharged as cured until cultured specimens of their urine are free from bacteria. The urine obtained under sterile precautions or by catheter contain a far greater number of bacteria in pyelitis than in any other disease studied.

Wasting Disorders of Early Infancy.—Leonard G. Parsons (*Lancet,* April 5, 1924) calls attention to the fact that fat indigestion occurs in infantile atrophy under two conditions: 1. When diarrhea develops. In these cases as a result of peristaltic hurry, rapid passage through the intestine occurs, and fat splitting may be poor. 2. When high fat content dried milks are given. In these cases fat splitting is always good, the stool is a large one, and contains much soap and free fatty acid. The treatment of artificially fed children in the first of these groups consists in putting them on a low fat dietary, and giving them carbohydrate in the form of one of the less fermentable sugars, e. g., dextrimaltose. The low fat dietary can be obtained by giving them skim milk, or a mixture of skim and whole milk; at times a condensed, sweetened milk, diluted so as to give a low fat content, is found very useful, or one of the artificial foods used in the same manner. Protein milk has also proved valuable on occasions. When the diarrhea improves, the fat content should be increased again, until the child is on a normal milk mixture. A short preliminary period of starvation is often useful in these cases, particularly if the onset of diarrhea is sudden (or possibly infective), but many children are so enfeebled that they are unable to stand this treatment. The treatment of the second group consists in giving a lower fat content dried milk, or substituting an ordinary cow's milk mixture for the dried milk.

Deficiency of Sunlight as a Morbid Factor in Early Childhood.—Woringer (*Journal de médecine de Paris,* June 7, 1924) calls attention to the marked influence of light upon spasmophilia in nurslings. Sunlight or the ultraviolet rays bring about permanent cessation of the convulsions in a few days, and the hypocalcemia which always accompanies spasmophilia and bears a relationship to the excessive neuromuscular excitability is corrected permanently without any treatment other than heliotherapy and actinotherapy. Sunlight seems an indispensable factor in the normal development of the child, and where it is lacking, a species of deficiency disease results. The following facts support the origin of spasmophilia in lack of light: 1, the periodical seasonal appearance of the disease in the winter and spring; 2, its particular occurrence in districts receiving little direct sunlight and its almost complete absence in the tropics; 3, its prevalence among the poorer classes, living on narrow streets and in unhealthy dwellings, and 4, the curative and preventive influence of light. Rickets and spasmophilia are closely related, and a combination of the two disorders has at all times been noticed. Like causes bring on the two diseases; other factors, such as the diet, digestive disturbances, infections and intoxications may intervene, but only in a secondary way, acting in conjunction with the deficiency of sunlight. Other morbid states of childhood may be ascribed to the latter factor, viz., infections of the respiratory tract—common in rachitics—and

otitis media, which runs an especially severe course in spasmophilics and is quickly recovered from under actinotherapy. These facts warrant the thought that deficiency of sunlight is accompanied by a special susceptibility and a lowering of resistance to bacterial infections, especially pneumococcic. Infants should be exposed to the sun's rays from the first few weeks of life. Among the poorer classes, the mothers should be particularly advised to take their infants into sunny places. Among those whose dwelling receives direct sunlight, the advice should be given to expose the baby directly in the sunlight and not behind windowpanes, the glass of which absorbs the greater portion of the especially useful ultraviolet rays. When sunlight is lacking in the winter, the mercury vapor quartz lamp should be brought into requisition.

Rickets and Parathyroids.—F. S. Hammett (*Endocrinology*, July, 1924, vol. 8, p. 557) shows that retardation of bone ossification in rickets is due to deficient calcium, in parathyroid states of underfunction to deficiency of phosphorus in the organism, the two being opposite phases of the phosphorus calcium balance.

Late Rickets and Osteomalacia.—H. S. Hutchison and Grace Stapleton (*British Journal of Children's Diseases*, April-June, 1924) state that in osteomalacia the existence of pregnancy does not produce symptoms differing in any essential way from those occurring in nonpuerperal cases. The presence of pregnancy, therefore, does not entitle osteomalacia to be regarded as a separate entity. The existing differentiation of early rickets, late rickets, and osteomalacia according to age incidence does not appear to be justifiable. Evidence points to the conclusion that these conditions are identical and represent rickets at different ages. The primal causal factor of early rickets, late rickets and osteomalacia is environmental. While lack of sunlight is considered a factor of importance, diminution in muscular activity must be looked upon as of prime importance. Pregnancy is of secondary importance in the causation of osteomalacia.

Acidosis in Relation to Acute Rickets.—Norman Burgess and A. A. Osman (*Lancet*, February 9, 1924) show that the results of determinations of the plasma bicarbonate and acetone bodies in the blood and urine form an interesting comparison with figures recently obtained in a series of cases of diabetes mellitus. In the latter it was found that the diminution of the plasma bicarbonate corresponded fairly closely with the total acetone bodies present in the blood; this is far from being the case in acute rickets, although in each case there was marked diminution in the alkali reserve. In two of the three cases reported, no acetone bodies were present, while in the other case, although the plasma bicarbonate was still lower eleven days after the first observations were made, the ketosis disappeared after four days and did not reappear. So far the author's results would tend to show that there is a severe acidosis in acute rickets in which the acetone bodies play no part. This would lead to the conclusion that the acidosis is due to one or both of the following factors: 1, loss of bases by some other channel, as the feces or urine; 2, some other acid bodies present in the blood.

Instability of the Plasma in Sick Infants.—G. Török (*Monatsschrift für Kinderheilkunde*, April, 1924) found that in individual newborn infants the Gerlóczy reaction of the instability of the plasma is positive and most pronounced on the third to the fourth day of life. As the destruction of leucocytes is very marked in certain newborn infants, which also reaches its peak on the third or fourth day, it is possible that this instability may be attributed to the globulin set free by the leucocytes, which in some respects is similar to the nucleoproteins. The Gerlóczy reaction (precipitation by saturation with salts) is negative in healthy infants. Parenteral infections produce less change in the colloidal condition of the plasma in breast fed infants than in those artificially fed, and in older infants less than in younger infants. Of the parenteral infections, rhinitis and angina do not alter the instability reaction of the plasma, febrile bronchitis alters it but little, and pneumonia and suppurations alter the plasma reaction of the blood to the same very great extent as some skin diseases, like pemphigus neonatorum and Ritter's and Leiner's diseases. The reaction is positive in tuberculosis and syphilis. It is negative in rachitis and exudative diathesis. The reaction is negative in slight digestive disturbances, but positive in severe reactions.

Acute Appendicitis in Childhood.—F. Beekman (*Annals of Surgery*, April, 1924) sums up his case findings as follows:

1. The earlier diagnosis is made and operation performed, the lower is the mortality, the fewer are the complications and the shorter is the convalescence.
2. Acute appendicitis in children is more frequent as adolescence is approached.
3. With the exception of children under five years of age, in whom it is extremely high, the mortality is about the same as among young adults.
4. The disease is found twice as commonly in boys as in girls, the mortality being about twice as great among girls as boys.
5. Perforation of the appendix with spreading peritonitis or abscess formation occurs more often in children than in adults.
6. Immediate postoperative complications are as commonly found in children as in adults, with the exception of secondary abscesses, which are seen more often.
7. Incisional hernia follows operation in children more often than in adults. Sloughing of muscles and aponeurosis, secondary abscesses and partial evisceration of portions of the abdominal contents appear to be the causative factor.
8. Mistakes in diagnosis would seem to be inevitable and it would appear better to err by operating.

Infant Welfare Movement.—W. M. Feldman (*British Journal of Children's Diseases*, April-June, 1924) recommends the future development of the infant welfare movement along the following lines: 1. There should be provision for free continuation classes in infant welfare and prematernity, which all girls should be made to attend. 2. General and child hygiene should be a subject of tuition in all schools, especially secondary schools. 3. A course, including a consideration of the important causes of antenatal and postnatal infantile mortality and their prevention, should be given to medical and postgraduate students, as well as the subjects of the physiology, pathology and hygiene of antenatal and early postnatal life in their theoretical and practical aspects. 4. Good, commodious, and hygienic houses should be provided at a reasonable rental. 5. Greater cooperation between infant welfare centres and the neighboring practitioners should be encouraged. 6. The infant welfare and antenatal centres ought to have full time medical officers who have had special training in the physiology, pathology and hygiene of the various stages of child life, and who are capable of carrying out legitimate research in the physiology of infant nutrition. 7. The antenatal clinics should be merely branches of the infant welfare centres and not separate entities, and there should be an adequate number of antenatal beds or wards for the purpose of treating any discovered abnormality of pregnancy as well as for research purposes. 8. Prenuptial clinics, where persons of both sexes can get advice as regards their fitness to marry, both from the genetic and constitutional standpoints, should be established.

Diarrhea in Infants.—In a symposium on diarrhea (*Southern Medical Journal*, August, 1924) Wilburt C. Davison discusses the bacteriology of diarrhea in infants and expresses the opinion that although there is as yet no absolute proof of the etiology, it would seem probable that infantile diarrhea, except bacillary and amebic dysentery, is not a primary bacterial infection, but that, as a result of changes produced by external heat or by some other cause, the gastric acidity and motility and the gastric and duodenal enzymes are reduced. Undigested and unabsorbed food is then fermented by the stool organisms, either in the small or large intestine, into irritating end products which accelerate peristalsis and produce diarrhea.

Owen H. Wilson, on the other hand, maintains that the exciting cause of infectious diarrhea is undoubtedly an infection wtih some pathogenic organism or organisms, and in preventing this, the improved methods of handling milk, the technic of feeding, the "swat the fly" campaign, the widely spread instruction in general cleanliness and hygiene through the public nurses, and the extended use of boiled milk have been responsible in great measure for the decrease in the number of infectious contacts.

N. C. Womack discusses the treatment of extremely serious cases and emphasized the need of complete rest as essential.

Ralph C. Spence and Earl B. McKinley report twenty

cases of bacillary dysentery treated with the bacteriophage. The mortality was only ten per cent. They believe that the therapeutic use of the bacteriophage in the treatment of acute bacillary dysentery in children will greatly lower the mortality; that the earlier in the course of the disease the treatment is begun the better are the chances for an early recovery, and that in those cases which recover the treatment with the bacteriophage will greatly shorten the duration of the disease.

In the discussion several speakers agreed with Dr. Womack in his condemnation of an initial purge. As Dr. D. Lesesne Smith put it: "The child gets a little sick and is given calomel and castor oil and his resistance is lowered. We have diarrhea following the administration of these drugs."

Significance of Protein Fractions of the Blood Plasma in Infancy.—J. Duzár and St. Risznyák (*Monatsschrift für Kinderheilkunde,* April, 1924) assert that the serum of infants is more stable in its composition than in adults. The maximum of the stability of the plasma occurs in about the second month of life. The globulin content of the serum runs parallel with this. In icterus neonatorum there is a moderately increased amount of total albumin and the portion of fibrinogen is increased. In syphilis there is a marked increased of fibrinogen and also in intoxications, but there is a diminution in the amount of the serum globulin in proportion to the albumin. On the other hand, infectious intoxications show a high globulin albumin quotient very early in the disease. Bronchopneumonia shows a marked increase in the globulin.

Congenital Defects of the Skin and the Scalp in the Newborn.—Hans Otto Neumann (*Zentralblatt für Gynäkologie,* March 15, 1924) maintains that these congenital defects result from adhesions of the skin with the amnion as a result of developmental disturbances or inflammatory processes. At the sites of such adhesions the formation of pavement epithelium does not occur. Usually these adhesions are stretched into bands with the growth of the fetus and the increase of the amniotic fluid. Intrauterine scars may result from their rupture as a result of a sudden intrauterine movement of the fetus. If the rupture occurs during delivery a fresh defect is observed on the child. These amniotic adhesions may result in extensive injuries of the fetus, such as cleft formations around the face, and even amputations of fingers, toes and extremities. Broad adhesions may result in ectopy of the abdominal viscera, umbilical hernia, etc.

Impetigo Contagiosa in Children.—D. T. Smith and E. L. Burky (*Bulletin of the Johns Hopkins Hospital,* March, 1924) base the present study on nine cases of impetigo and one of chickenpox in which the vesicles resembled those of impetigo. Hemolytic streptococci were found in six cases, and hemolytic staphylococcus aureus in three; while the culture from the case of chickenpox was negative. No serological unity was found among the streptococcus strains isolated, and the sugar fermentation tests also showed an absence of unity. The staphylococci were also heterologous. These cases were treated routinely with an ointment of ammoniated mercury one third the usual strength, which is effective for the streptococcus, but not for the staphylococcus cases. Gentian violet was effective in the treatment of both.

Acetonemia and Volvulus of the Small Intestine in Children.—F. John Poynton (*Lancet,* May 24, 1924) calls attention to the fact that acetonemia may be associated with various pathological conditions. Among these he includes volvulus of the small intestine, in which cases the acetonemia reaches such proportions as to dominate the diagnosis. In this group of cases starvation is a feature. When the obstruction is high and vomiting is an urgent and early symptom, acetonemia becomes rapidly apparent and the drowsiness, loss of strength, and extreme illness may then be attributed to a primary cyclical vomiting. The symptoms are most probably brought about by the serious results of an obstruction high in the intestinal tract.

In childhood, acetonemia may occur under very different conditions. It may be a fleeting event and not perceptibly alter the outlook. If persistently looked for it may be found to have no serious clinical significance. In other cases, as in diabetes, it may have the greatest importance as a danger signal. In yet others it may be the prominent feature in a recurrent illness which may, though rarely, prove fatal without, with the exception of the liver, showing any pathological signs of responsibility for death. Finally, it may prove a cause of grave errors in diagnosis by its prominence in the cases mentioned. The other responsible factors are the absence of abdominal physical signs, the occurrence of only partial constipation, and the history of repeated attacks with complete recovery between times. The moral is that acetonemia in childhood should never be regarded as a disease, but always as a symptom.

Clinical Experiences in Organotherapy with Special Reference to the Stimulation of Body Growth.—Fourteen case histories are recorded by Theodore A. McGraw (*Endocrinology,* March, 1924) the patient in every case being a child suffering from retarded physical development, either with or without definite symptoms of endocrine disease. In presenting therapeutic suggestions he says: "While each deficiency case is usually pluriglandular, one gland generally stands out as primarily and chiefly affected. Treat this deficiency first by administering solely the animal extract of that gland; then, if necessary, add one at a time the extracts of the glands secondarily affected to the prescription."

HERNIA

Surgical Anatomy of Femoral Hernia.—H. S. Souttar (*British Medical Journal,* March 1, 1924) mentions the following points of practical importance in the diagnosis and treatment of femoral hernia: 1. In most cases the presence of a femoral hernia is characterized by the appearance of a soft, spherical swelling in the angle between Poupart's ligament and the tendon of the adductor longus. 2. The pubic spine is not so satisfactory as Poupart's ligament itself as a boundary between inguinal and femoral hernias. 3. Gimbernat's ligament is not directly concerned in the strangulation of a femoral hernia, and its division serves no useful purpose, and may be dangerous.

Hernia Through Foramen of Winslow.—A. Ullman (*Surgery, Gynecology and Obstetrics,* February, 1924) reports on several cases of this rare disease, saying that preoperative diagnosis has never been done, and that in many instances it has passed as simple intestinal obstruction under operation. In conclusion he says that one might ask whether a preoperative diagnosis would ever be made of a hernia strangulated through the foramen of Winslow and would it be differentiated from other internal herniæ? That remains to be seen. At present, the important point is to diagnose intestinal obstruction and to operate at once. In this way the prognosis in herniæ strangulated at the foramen of Winslow can no doubt be rendered more favorable.

Recurring Hernia of the Diaphragm.—P. E. Truesdale (*Annals of Surgery,* May, 1924) says that recurrence of hernia of the diaphragm after many months is a liability irrespective of the method or suture material employed in repair of the hernia orifice. Deficiency in the musculature of the diaphragm exists as a natural sequence of prolonged limitation of function or of trauma to terminal branches of the phrenic nerve, or both of these conditions. The method of approach in dealing with hernia of the diaphragm may be selected to best advantage after determining the direction of greater accessibility, and conditions to be met above and below the diaphragm. Early operation and the avoidance of such activities as produce unusual increase of intraabdominal pressure is the only safeguard against recurrence.

Inflammation in Sacs of Inguinal Hernia.—G. M. Smith (*Annals of Surgery,* February, 1924) summarizes his findings as follows: Microscopically, inguinal hernial sacs may be divided into two groups. Group 1, the fibrous hernial sac, representing the usual hernial sac of infancy and childhood and the more common form seen in the adult. It has a tendency to become thickened in the progress of its development. Group 2, the fibrous fatty hernial sac. There is a tendency of fatty tissue to replace the fibrous and elastic tissue situated below the lining endothelium. Inflammatory changes were found in thirty-seven out of two hundred and fifty enguinal hernial sacs removed at operation. Inflammation occurred under a variety of conditions: in the form of aseptic inflammation, infectious (tuberculosis), or by parasites (trichina spiralis). A subacute inflammation of the subendothelial connective tissue of an inguinal hernial sac may be associated with the onset of hernia following muscular effort.

Right Diaphragmatic Hernia.—S. Fineman and H. M. Conner (*American Journal of the Medical Sciences,* May, 1924) report on an unusual case as follows: The incidence of diaphragmatic hernia at the Mayo Clinic is one in twenty-three thousand cases. The case of diaphragmatic hernia reported was on the right side, and in all probability of the short esophagus type. The intragastric tension in this case was found to be the reverse of what is usually found in a normal person. In such hernias, on account of the congenitally shortened esophagus, we believe complete reduction of the stomach from the chest into the abdominal cavity is impossible. Therefore, for the sake of rational management, every patient with diaphragmatic hernia involving the stomach should have a careful roentgenologic examination with the specific object in mind of determining, so far as possible, the length of the esophagus.

Fascia Plication for Inguinal Hernia.—J. A. Pettit (*Surgery, Gynecology and Obstetrics,* May, 1924) says that if the general principles of plastic surgery are applied in operating on inguinal hernia, better results may be expected. The sustaining tissue in such operations is fascia. As the fibres are sewed longitudinally they have a tendency to spread, especially if the fascia is already attenuated. A complete plication or overlapping insures a maximum permanency of security, and avoids the tendency of the fibres to spread. By high transplantation of the cord in the new fascial canal, the possibility of another peritoneal protrusion is minimized.

The type of suture described gives a minimum amount of constriction to the fascial fibres and at the same time a maximum coaptation. To secure an early as well as firm fascial cohesion it is important to cleanse the fascial surfaces thoroughly of all fat and areolear tissues, otherwise the sutured areas may slip as would a pseudoarthrosis. The high curved incision in the skin and fatty layer removes the wound the greatest distance from possible sources of postoperative contamination.

Operations for Inguinal Hernia, Especially in Infancy.—Gustav Ranft (*Monatsschrift für Kinderheilkunde,* March, 1924) summarizes his views on the incarcerations occurring in infancy as follows: 1. Every inguinal hernia occurring in infancy should be subjected to radical operation. 2. Every case of incarceration that cannot be reduced should quickly be put into the hands of a surgeon. An attempt at careful taxis is allowable, but if it does not succeed at once any further waiting and further conservative treatment is a crime against the life of the child. 3. Every successful attempt at taxis should be followed in a few days by a radical operation. 4. The results of operative interference for incarceration in infancy are good.

The claims for early operation are fortified by the following guiding principles: 1. The radical operation is necessary because a spontaneous recovery cannot be expected, because the child's development is interfered with by the rupture and because the life of the child is endangered. 2. The truss cannot be considered as a complete substitute because it does not definitely lead to a permanent recovery and because it is inconvenient, troublesome and even dangerous in the hands of the inexperienced and also because it lessens the chances of the operation. 3. The radical operation should consist only of a high ligature, all plastic procedures are unnecessary in simple cases and the division and suture of the external aponeurosis should be avoided because they increase the danger of recurrence. For gliding hernias or in agglutination between the hernial sac and abdominal contents, the Kocher invagination displacement procedure seems to give better results in selected and simple cases. 4. The results of the radical operation and early surgical interference are good. 5. The main requisite for every herniotomy in early infancy is an otherwise healthy state of the child. The digestive capacity should be arranged so as to be on the increase. 6. If for some reason a radical operation is impossible, no local treatment, except the necessary care of the skin, should be given to the hernia. 7. The indication for herniotomy should be left to the surgeon who specializes in the surgery of infancy. 8. Only in this way can the incarcerations occurring in fancy be reduced to a minimum and deaths avoided. 9. In every case of incarceration in infancy the author utilizes taxis and possibly also the hanging position, the hot bath, with avoidance of any force. If these measures fail, herniotomy and a radical operation should be done immediately.

Postoperative Recurrence of Inguinal Hernia.—A. S. Morrow (*Annals of Surgery,* October, 1923) believes that the operative cure of inguinal hernia is not the simple procedure that many surgeons regard it, but is an operation requiring sound surgical judgment, as well as considerable technical skill. Oblique and direct hernia should be looked upon as two distinct conditions, in both of which recurrence is probably more frequent than was formerly recognized—this being especially true of the direct form. Improvement in operative results is not likely to come from the development of an operation based upon new principles, but in the elimination of what are considered to be frequent causes of failure to obtain a permanent cure. These are: Subjecting to operation patients in whom, on account of the type of hernia, and the condition of the parts that must be utilized for repair, there is small chance of obtaining a permanent cure. The use of an operation which, while adequate in some cases, fails to meet the indications in an individual case. The failure thoroughly to remove the sac or to recognize and remove a double sac. Repair of the canal under tension. Injury to the nerve supply of the inguinal region. Infection. Separation of the repair structures from a failure of the sutures to hold, or from the strain of postoperative vomiting.

Repairing Inguinal Hernia With Living Sutures.—J. McEachern (*Annals of Surgery,* May, 1924) offers the following technic, which he has found by experience to be highly commendable for the satisfactory closure it gives.

A five inch incision is made in the usual site terminating slightly below the pubic spine. The external ring and the tendon of the external oblique up to its origin from the fleshy belly of the muscle is cleared. One blade of a pair of blunt scissors enters the external ring near its inner pillar, and with the scissors following the direction of the fibres the tendon is slit up to its origin from the muscle. A second incision one quarter inch internal to the first is made through the tendon with a scalpel, at a point about an inch above the pubic bone. The blade of the scissors is inserted into this incision and carried parallel to the first incision up to the muscular fibres where the strip of tendon is severed from its muscular attachment. In completing the freeing of the strip of tendon below, the incision at a point about half an inch from the pubic bone bends inward, thus giving the strip of tendon to be used as a suture, a wide attachment to the bone.

The free end of the suture thus obtained is threaded on a curved needle with a large eye, and the end secured against slipping out with a ligature of fine catgut. The needle is then passed through the conjoined tendon close to the pubis. This results in strain being applied in the normal direction of tendon fibres, and should ensure that the suture will not be pulled from its bony attachment. The needle now picks up the reflected portion of Poupart's ligament and the periosteum covering the pubic bone close to the spine. The internal oblique is drawn down to Poupart's ligament with additional stitches, the end being secured by drawing the suture through itself, splitting the ends and tying them across in a triple knot after the method of Gallie. After the knot is tied, a needle threaded with No. 0 chromic catgut is passed through the knot and tied. Additional security against the knot slipping can be obtained by passing the needle beneath the suture or through the adjacent portion of Poupart's ligament and tying down the ends. The edges of the external oblique are now sutured external to the cord in the usual way.

In the cases in which the author used the method this single suture taken from the external oblique tendon was long enough to close the defect effectively. However, if an additional suture to close the upper end is required it can be obtained by dissecting up the external oblique tendon from the underlying tendon of the internal oblique as far as the median line. A slip of the internal oblique tendon is then cut out, leaving its muscular attachment undisturbed. This suture is threaded on a needle as before, the needle is passed through the cut edges of the internal oblique tendon, and then through the loop, thus forming a knot which prevents the suture pulling away from the muscular attachment. The needle is then passed through Poupart's ligament and up through the internal oblique and the end secured as before. The gap in the tendon of the internal oblique from which the suture has been taken is closed with No. 1 chromic catgut.

MEDICAL JOURNAL AND RECORD
A National Review of Medicine and Surgery
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Address all communications to
A. R. ELLIOTT PUBLISHING COMPANY.
Publishers, 53 Park Place, New York, N. Y.

Subscription Price: Under Domestic Postage, $6; Foreign Postage, $8; Single Copies, 50 cents.

Remittances should be made by New York Exchange, post office or express money order, payable to A. R. Elliott Publishing Co., or by registered mail, as the publishers are not responsible for money sent by unregistered mail. Remittances from Foreign Countries should be made with International Money Orders.

Entered at the Post Office at New York and admitted for transportation through the mail as second class matter.

NEW YORK, WEDNESDAY, DECEMBER 17, 1924

Medicolegal Notes.

BLOOD POISONING FROM PULLING TOOTH HELD ACCIDENT

The Texas Court of Civil Appeals holds, Francis v. International Travelers' Assn., 260 S. W., 938, that infection, blood poisoning and death, resulting from the pulling of a tooth, is an unusual, unexpected, and unlooked for occurrence, and is covered by a policy insuring against death from injuries received "through external, violent and accidental means."

DEATH FROM FRACTURED SKULL OR FROM ARTERIOSCLEROSIS?

A workman afflicted with arteriosclerosis was injured by falling and striking a concrete floor with the back of his head. He died fifteen months later, the immediate cause of the death being a severe hemorrhage in the brain. There was evidence tending to show that when he fell his skull was fractured, a slight hemorrhage in the brain followed, and that the fatal termination of his disease was hastened by the accidental injury to his head. The Minnesota Industrial Commission found that death was caused by the accidental injury. Under the evidence, the Minnesota Supreme Court held, Maxon v. Swift & Co., 198 N. W., 133, that the finding could not be held to have been the result of speculation and conjecture, and affirmed the award.

DISCRIMINATORY CLASSIFICATION IN ILLINOIS MEDICAL PRACTICE ACT

In proceedings, under the Illinois Medical Practice Act of 1899, against an osteopathist holding licenses authorizing him to practise a system of treating human ailments without the use of medicine internally or externally and without performing surgical operations, and to practise midwifery without the use of any drug or medicine, or attend other than cases of labor, charging that he practised medicine and surgery by treating a woman's ailment by a surgical operation on her and administering pituitrin and strychnine, it appeared that the defendant had received courses of instruction, including the nature, use, operation and effect of strychnine and pituitrin in connection with and incident to surgery. The act of operative surgery charged was curetting the patient's uterus for the removal of morbid matter, consequent on an illegal act or operation performed by some other person. He did not administer any drug as a curative or remedial agency for a disease or ailment, but only as a part of and incidental to the surgical operation, either as a stimulant or by contraction of tissues, to secure successful results of the operation.

The Illinois Supreme Court held, People v. Graham, 211 Ill., 92, 142 N. E., 449, that, while the Legislature, in the enactment of such statutes, may provide for classes, so long as the classification is general and bears a reasonable relation to the purpose sought to be accomplished, any act of the Legislature which is merely arbitrary and discriminatory, where there is no substantial difference between the classes, and which abridges privileges of citizens or grants special privileges to classes, is in violation of constitutional rights.

The application of these principles was held to require a reversal of judgment for plaintiff in this case. "There was no provision of the act," the court said, "under which a license to practise surgery could have been given to the defendant. The right to such a license was limited to a class to which he did not belong, and as the law does not require a useless act to secure a right, the defendant was not called upon to apply for a license that could not be granted. The act was not void as to any person not deprived of a constitutional right, but was void as applied to the defendant deprived of such right."

RUPTURE OF ARTERY HELD ON MEDICAL TESTIMONY TO BE THE RESULT OF STRAIN

A claim for compensation under the Pennsylvania Workmen's Compensation Act was based on the theory that death of a mine car loader was due to rupture of a bloodvessel caused by extra exertion used in moving a partially loaded mine car along a track. Within from four to fifteen minutes after pushing the car, the deceased complained of a pain in his head and immediately fell forward in a semiconscious condition. He died the same day, the cause of death being diagnosed as apoplexy or cerebral hemorrhage.

Medical witness testified that deceased was not in good physical condition, being afflicted with arteriosclerosis, and that, owing to the lapse of time between the moving of the car and the indication of physical distress, they could not say positively that the exertion was responsible for deceased's death, being of opinion that a rupture of a bloodvessel would manifest itself in a much shorter time and perhaps have resulted in an immediate collapse. The furthest they would go was to say that the exertion could or might possibly have caused the fracture of an artery in deceased's head. This was held insufficient to show a causal connection between the effort used in pushing the car and the cerebral hemorrhage.

Two additional physicians called to testify at the rehearing placed an entirely different light on the situation. These witnesses said the undisputed facts clearly indicated that death resulted from the strain incident to assisting in moving the car, and that the interval of four to fifteen minutes, or even a longer time, before an outward manifestation of a rupture of a bloodvessel appeared, was not unusual, but merely signified the original break to be of slight character. This testimony was held, Samoskie v. Philadelphia & Reading (Pa.), 124 Atl., 471, to sufficiently support findings that the exertion required in moving the car produced an increase in blood pressure, which, in turn, resulted in the rupture of an artery causing death, and, inasmuch as the injury occurred in the course of deceased's employment, claimant was entitled to compensation.

EMPHYSEMA FROM INHALING SMOKE AND FUMES HELD AN OCCUPATIONAL DISEASE

The employment of an electrical engineer in a coal mine required his presence in rooms where electric generators were in operation and gave off smoke and fumes, especially when overloaded. On August 24, 1921, he inhaled an unusual quantity of such smoke and fumes while extinguishing a fire, and soon after had pains in the chest and shortness of breath, which condition gradually increased until total disability resulted at the end of six months. The Pennsylvania Supreme Court, Manchline v. State Ins. Fund, 124 Atl., 168, reversing an award of compensation, held that to connect the disease with the socalled accident required expert evidence, but that of the only medical witness warranted the conclusion that the inhaling of such vapors during a considerable period of time would be likely to cause emphysema, while the excessive inhaling thereof on a single occasion, would not although it might possibly do so. This was not sufficient to sustain the claim.

The medical evidence indicated that emphysema is normally of slow development and probably here came on gradually from continued contract with the smoke and fumes, in which case it was not an accident but the result of an accupational disease, and therefore not compensable under the statute.

Respiratory Symposium

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JULY 2, 1924

A Study of History and Symptoms as a Practical Aid in the Diagnosis of Pulmonary Tuberculosis*

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The importance of the early diagnosis of tuberculosis cannot be too strongly emphasized. It matters not in what field of medicine you are engaged you may be the first to see the patient after he has become actively tuberculous. If you are able to make a diagnosis at this time or even have your suspicions aroused so that a diagnosis will be made you have rendered a real service. It may be that a patient first consults a surgeon for an operation. If active tuberculosis is present and not detected a surgical operation may prove disastrous much to the chagrin of the operator. The same may apply in other fields of medicine. It is not the purpose of this paper to bring out anything new in the diagnosis of tuberculosis nor in fact anything with which you are not acquainted. Its purpose will be to refresh your memories with what you already know and try to impress upon you the importance of using it, simple as it may seem, to bring about an earlier diagnosis for the benefit of the patient and your own satisfaction.

Do not conclude from these remarks that the diagnosis of tuberculosis is always easy. It is not, and it often taxes every means at our command to make a correct diagnosis. Its very nature makes the diagnosis hard at times. It may be of a very obscure nature, one patient presenting symptoms of one sort while in the next they will be entirely different.

There are two things necessary to produce clinical tuberculosis; first, infection with the germs and second, a lowered resistance. It has been proved conclusively that the germs alone will not produce the disease for many are known to be infected in whom it never develops. It is the lowered resistance which gives the germs already present a chance to get a foothold and produce active trouble. Even with one's greatest efforts many cases will reach the advanced stage of the disease before consulting the physician. On the other hand many patients under their care for one cause or another are permitted to go with the disease undiagnosed. These are the ones which should not be overlooked or allowed to reach the advanced stage. Most of these can be discovered reasonably early if only time and attention are given to looking for them. The fact that a patient has a definite disease other than tuberculosis does not exclude the latter. It is rather this patient who may have tuberculosis, for conditions are favorable for its development. This should be kept in mind especially if other symptoms are present or if the patient is slower than he should be in making a recovery.

Patients often drop the first physician who tells them they have tuberculosis and seek others until they have found one, it matters not whether he is a regular, an osteopath or a chiropractor, who will tell them they do not have it. It is to the advantage of the physician to make the diagnosis as early as possible and when he has done so to tell the patient the exact condition. The importance of informing the patient as soon as a diagnosis has been made cannot be overemphasized. No physician can get results in treatment or the cooperation of the patient in carrying out instructions and taking precautions until he first convinces him he has the disease and impresses upon him the seriousness of the situation. The idea of a physician saying, "I can't tell the patient for I feel that he will give up as soon as he knows his condition," is absurd. I have yet to see or even authentically to hear of a patient who died because of being told he had tuberculosis. This is the only way to get his cooperation. The patient should not be considered alone in this matter, many things have to be done for the protection of others, and this can be done by having the patient take the proper precautions. The importance of an early diagnosis cannot be denied neither can it be denied that too many patients are allowed to reach the far advanced stage or permitted to run active symptoms too long before being discovered. It should then be to the interest of all to familiarize themselves with the things which will help in making an earlier diagnosis and at a time when it will be of the greatest value to the patient and those with whom he associates.

*Read by invitation before the Hennepin County Medical Society, Minneapolis, September 12, 1923.

How can this be done? The principal means used in making a diagnosis are, a study of history, symptoms, physical signs, x ray and laboratory findings. Choosing these methods in the order of their relative value I would take first, symptoms, second, history, third, physical signs, fourth, x ray and last, laboratory findings. This is just the reverse of the views held by many physicians. Apparently there are many who feel that an examination of the sputum is all that is necessary. Some seem to think they have done their duty when they have obtained a specimen of something the patient expectorates, it matters not whether it comes from the mouth, throat, nose or lungs and sent it to the laboratory to be examined. If the report comes back negative the patient does not have tuberculosis and very likely another specimen is not sent. The finding of germs is proof of the presence of the disease. If they are not found it is not proof in itself the disease is absent. It is very hard to find the germs in the incipient case. Should one allow the patient to reach an advanced stage because the germs have not been found? This is frequently done and owing to the uncertainty of finding germs until the disease has become advanced is my reason for placing it last in value of the means at our disposal. The x ray is a most valuable aid in the diagnosis but when used alone would not be conclusive. Like physical findings it shows what has taken place in the chest rather than what is taking place. I was greatly amused recently when I read two papers written by the same man, but several years apart, on the use of the x ray. In the former paper he stated he could make an absolute diagnosis of tuberculosis with the use of the x ray. In the latter he had become modest enough to admit that it was of great help but should be used only with other means at our disposal.

Physical signs like x ray findings are of little value when taken alone. The more expert the examiner the less apt he would be to risk a diagnosis without something to corroborate the findings. I have mentioned the first three, laboratory findings, x ray and physical findings, more to warn of the danger encountered in depending on them for a diagnosis. The other two methods, history and symptoms, can be used by any physician, and found of practical value, who will give a little time to obtaining them. These alone will often give us sufficient information to arouse our suspicion when tuberculosis is present and if it is not possible to make an absolute diagnosis it will give an opportunity to refer the patient to one who can and before it is too late.

The value of a properly taken history is too often underestimated. It should be used more widely and with greater thoroughness. It is something that can be obtained by any physician although some may be decidedly more expert than others. Anything of as great value should be carefully studied and employed to the fullest extent.

Symptoms likewise can be obtained by all physicians who will take a little time to ask questions and listen to the patient's answers.

My selection of this subject for a paper was due to the fact that some of the earliest cases referred to me were sent by physicians who had never made an examination of the patient but became suspicious of tuberculosis as a result of a carefully taken history and study of symptoms. A physician whose hearing was impaired and who could not use the stethoscope or percussion satisfactorily once suggested to me that I write a paper dealing with the symptoms of tuberculosis. He like the physicians mentioned above who did not make physical examinations had become fairly expert in making a diagnosis on the history and symptoms.

The value of the history depends on how well it is taken. If the best results are to be had it should go into in the most minute detail and nothing should be taken for granted. The family history is carefully taken not on account of the old idea that tuberculosis is hereditary, but to ascertain if there has been any intimate exposure. To ask if any relative has ever died of tuberculosis is not sufficient. Begin with the grandparents and study each individually, learn the cause of death in each instance. If the nature of the disease cannot be ascertained, endeavor to learn if they had a chronic cough, suffered from asthma, bronchitis or a run down condition. If any of the family died of a disease simulating in any way tuberculosis ascertain if the patient was intimately associated with this member. It is most important to learn all about the grandparents and whether any of them living in the home of the patient ever had chronic bronchitis or other chronic conditions resembling tuberculosis. I should like to emphasize the fact that these socalled cases of chronic bronchitis are our most fruitful source of infection, for many of them are open cases of tuberculosis which may seem apparently healthy with the exception of a slight bronchial trouble noticed usually in the winter and often called a winter cough. If any member of the family has died of tuberculosis it is important to know whether the patient was intimately associated with this person during the time when the disease was active. The age of the patient at time of exposure should be ascertained. It is well to remember that children are more susceptible to infection than adults and it must not be forgotten that although a child may be infected during early life he does not necessarily show symptoms until later, and many infected in childhood never develop clinical disease.

Having carefully studied the family history the next is to get that of the patient. First ascertain what the home conditions were from the earliest childhood, then a history of the childhood diseases, measles and whooping cough being of special importance, and the patient should be most carefully questioned regarding his health following either of these especially if he did not contract them until adult life. Learn what you can of the patient's general health, ascertain if he had any glandular involvement, ever suffered from pleurisy, anal fistula, ischiorectal abscess or discharging ears; these are often forerunners of active pulmonary tuberculosis. Question especially regarding recent diseases the patient may have had, such as frequent colds, grippe, influenza, pneumonia, typhoid fever or any injuries of the chest, surgical operations; also if he made an uneventful recovery. It must not be forgotten that any condition which lowers the patient's resistance

predisposes to tuberculosis, and one should be suspicious of typhoid, pneumonia, or other diseases or surgical operations when a patient makes a slow recovery.

Habit and occupation of patient should be carefully gone into. It is as important to find out conditions under which the patient works and lives as what he does. It is safer for one to do work considered predisposing to tuberculosis and live under the best conditions than it is to do something considered safe and live an irregular life in unfavorable surroundings. Learn if possible if the patient leads a regular life, smokes, chews, drinks, or indulges in other dissipation to excess. The past history of patient being carefully considered, his present illness should be thoroughly studied. Ask him how long it has been since he felt perfectly well rather than how long he has been sick; go back to the beginning and find out all that is possible between that time and the time patient consults you. It may be necessary to go over certain parts of it to help patient recall how his symptoms developed.

Having taken a full and complete history, the next step of importance is to study each symptom or to ascertain what symptoms the patient has developed. There is no symptom pathognomonic of the disease; what one patient complains of first and constantly, the next patient may never have. Tuberculosis often runs the most obscure symptoms, which at times may simulate other diseases. It is therefore necessary that the disease be kept in mind for it is one of the most frequent with which we have to deal and its obscure nature often keeps it in the background until it has become advanced.

If the greatest value is to be obtained from a study of the symptoms it should be done systematically and for this purpose I will group them according to Pottenger under the following headings:

GROUP I	
Toxemia	Digestive disturbances
Malaise	Loss of weight
Lack of endurance	Rapid pulse
Loss of strength	Night sweats
Nervous instability	Fever
Lack of appetite	Anemia
GROUP II	
Reflex origin	Loss of weight
Hoarseness	Circulatory disturbances
Tickling in larynx	Chest and shoulder pains
Cough	Flushing of face
Digestive disturbances	Apparent anemia
GROUP III	
Tuberculosis involvement *per se.*	Spitting of blood
	Pleurisy
Frequent and protracted colds	Sputum
	Fever

Some of these symptoms may fall in more than one group. The symptoms of group one may all be caused by something other than tuberculosis and must be studied with symptoms of groups two and three to be of value. The fact that active tuberculosis may be present without any of the symptoms of group one should not be overlooked.

SYMPTOMS OF GROUP I

The first symptoms of this group, malaise, feeling of being run down, lack of endurance and loss of strength, are common and are frequently the symptoms which first bring the patient to the physician. He does not seem to have the usual amount of energy, does not take the interest in things he did formerly. This is a very significant symptom and especially if the patient states he feels as tired or more so after a night's sleep than he did before retiring. One suffering from tuberculosis usually feels worse when first arising and gradually improves as the day progresses. Nervous instability is a condition often diagnosed as neurasthenia, which like asthma is more often a symptom than a disease and the physician should not be satisfied until a satisfactory cause has been found for the condition.

Digestive disturbances are extremely common in tuberculosis; at times the food is not properly digested; again it may manifest itself in loss of appetite. The patient feels hungry until food is placed before him, then all desire for it vanishes. This is especially true when the patient is tired. It is always wise to watch a patient's appetite closely when first placing him on exercise; if it declines one can be sure he is too active. The amount of exercise should be reduced or discontinued under such a condition. Great care should be used in treatment to see that every precaution is taken to prevent impairing the digestive system, for a good one is the greatest asset to a patient's chance for recovery. Tuberculous patients often have a good appetite, however, when running quite a high temperature which is of value in helping to differentiate it from other diseases when the patient has no appetite with excessive fever. Patients with tuberculosis where the digestive symptoms are pronounced are often treated for stomach trouble without benefit, whereas, when the real cause is ascertained and treated accordingly, satisfactory results are obtained.

Loss of weight is quite common in tuberculosis, but by no means always present. There seems to be a tendency, all too frequent, to think that a patient must be emaciated, otherwise he cannot have the disease. If study of weight is going to be of value, it is necessary to determine patient's greatest weight, present weight and estimated normal weight, for often one weighs himself too infrequently to tell whether he has lost recently.

Occasionally one notices he is steadily losing weight and consults a physician on account of it. The cause should be determined if possible for it is frequently due to tuberculosis.

A pulse higher than normal without a definite reason should be looked upon with suspicion. It is one of the most constant early symptoms in a case of active tuberculosis. It is also of value in prognosis for a patient who runs a persistently high pulse even when other symptoms are improving, has a rather unfavorable outlook.

Night sweat is a symptom quite common and looked upon by the laity as proof of tuberculosis. It is often the thing causing the patient to present himself to the physician for an examination. Sweats are due to toxemia which may be produced by other conditions than tuberculosis; still it should always be looked upon with suspicion until the real cause is ascertained. It is not well to wait until the advent of night sweats to make a diagnosis for it is the sign of excessive toxemia and advanced disease when due to tuberculosis.

Temperature properly taken is of the greatest value in determining active disease. To take the temperature once a day, or when a patient calls at the office, is worse than not taking it at all.

If it is to be of value it should be taken at least four times a day for one week, and the thermometer, regardless of the make, should remain in the mouth for at least five minutes. Cold or hot food or drinks should not have been taken for thirty minutes previous, not should the temperature be taken immediately after the patient has come in out of the cold. Mouth temperatures properly taken are of as great value and as accurate as rectal temperatures. I have frequently seen a patient's temperature reported by conscientious physicians as being below 100° but when properly taken, found to be 102° or higher. It was not because the physician wished to report an incorrect temperature, but because it was taken under the wrong conditions, or the thermometer was not allowed to remain in the mouth sufficiently long to register correctly. A high temperature should not be expected in the early case; one in the afternoon or evening of 99.5°, which can not be explained, should cause one to become suspicious. A temperature decidedly subnormal in the morning is of equal significance.

SYMPTOMS OF GROUP II

The symptoms of this group direct attention to parts other than the lungs. Several of these, digestive disturbances, loss of weight and circulatory changes, have been discussed under Group I and will not be taken up again.

Hoarseness is one of the most common early symptoms and one whose importance is too little valued, and frequently neglected. The condition is treated, at times even by throat specialists, without suspecting that it might be due to tuberculosis. The symptom should always cause one to suspect tuberculosis on account of its frequency. It is usually noticed when the patient is slightly tired or after talking or singing, when the voice has been overtaxed. It may be caused by one of several conditions; first and most common, especially in beginning tuberculosis, is the failure of the patient to approximate the vocal cords on account of reflex nerve condition. Again mucus may be attached to the cords which prevent their free movement and lastly, the larynx may be the seat of a tuberculous process. Do not conclude from this that the disease had its beginning in the larynx, for such is not the case. Within the past month I saw a patient who had been having his throat treated for the past six months, as though the trouble was limited to the area without the condition of the lungs being recognized. After he had grown tired of being treated, without results, he consulted another physician who made a diagnosis of tuberculosis without examination and referred him to a sanatorium. On admission his condition was found to be practically hopeless, not on account of laryngeal involvement but because the lungs were extensively diseased. Six months or more lost treating the larynx as though it was a local condition when the real condition should have been discovered and the proper treatment instituted. The fact that the patient lived as long as he did under such conditions shows that he had a natural resistance and a good chance for recovery had the proper diagnosis been made and treatment instituted.

Cough may be considered a symptom in all cases of pulmonary tuberculosis, for if there are none who do not cough, at least to a slight degree, the number is so small as to be negligible. At times a patient denies having a cough but if carefully questioned he will admit that he has a slight hacking cough, probably noticed the first thing in the morning, although it may be present only on first retiring at night. It may be, and frequently is, first noticed by some member of the family. This hacking cough with or without expectoration should lead one to think of tuberculosis. Any cough lasting more than two or three weeks should arouse suspicion and calls for a careful study and explanation of the cause when not due to tuberculosis. The patient may try to explain that it is due to a tickling in the throat, a little bronchial or catarrhal trouble, etc. The socalled emetic cough is a common symptom and when present should be most valuable in confirming a diagnosis. The patient may cough after eating and vomit although he does not have any sick feeling or discomfort of the stomach; when present one can be reasonably sure it is due to tuberculosis. Pains in the chest and shoulders are as common in active tuberculosis as rigidity of the rectus muscle in appendicitis. One often complains of them thinking he is suffering from rheumatism or he may complain of feeling tired across the shoulders. A careful study of these cases will often reveal early tuberculosis in an active form. A chilly sensation may be complained of which is most common along the spine and described as chills running up and down the back; again one may notice he is more susceptible to changes in the weather than usual.

Flushing of the face is quite common but is more often an indication of advanced or very active disease than a symptom of the early stage. The patient complains of one or both sides of the face feeling hot or flushed. When the process is confined to one lung, the flushing occurs on that side, when present in both lungs it is noticeable on side in which the lung is more extensively or actively involved.

Menstrual irregularities are common in young girls and women suffering from tuberculosis. One patient may complain of the flow being excessive and occurring at too frequent intervals, while the next will complain that the flow is diminished, occurring too infrequently or not at all. The real cause of such conditions should be sought and not explained as being due to chlorosis, anemia or a run down condition, as is too frequently the case. Most of the symptoms described above can be caused by other conditions than tuberculosis; still when carefully studied with those of Group III which will now be described will be found of great value in helping to make a correct diagnosis.

SYMPTOMS OF GROUP III

The symptoms of Group III are due to the lung process per se. The patient complains of contracting one cold after another or he may complain of a cold which may last during practically the whole winter. Many of these patients are suffering from tubercu-

lous bronchitis. If these colds are severe they may be called grippe and sometimes pneumonia. Symptoms such as these always call for a close and careful study of the patient, for when tuberculosis is present it should be detected at this time.

Blood spitting is a symptom which will cause a patient to make his own diagnosis; still physicians sometimes seek to find other causes for it and give an erroneous explanation only to lull patient into a feeling of false security. If any symptom is pathognomonic of tuberculosis it is the spitting of blood. There are causes other than tuberculosis which may provoke blood spitting but they are so rare that it should always be looked upon as being due to this cause until proved conclusively otherwise. It seems absurd to think of a physician offering other reasons for the spitting of blood until a patient has passed beyond the stage when treatment will be of value. A patient who had been having copious hemorrhages once came under my observation after he had been referred by his family physician to a throat specialist who upon examining the throat stated he could see the bleeding point. A few days later the patient had another hemorrhage and again consulted the family physician who assured him he need have no worry as the bleeding came from his throat. It was not until he had a large hemorrhage in the physician's office that a correct diagnosis was made and then only a few weeks before death. Other cases could be mentioned in which the misinterpretation of common and definite symptoms has led to a disastrous ending. If in every case of frank hemorrhage an immediate diagnosis of tuberculosis was made and the proper treatment instituted it would result in fewer mistakes and the saving of many lives.

Pleurisy also holds a more important place in the diagnosis than is usually given it. The majority of pleurisies are tuberculous and should be treated as such. Pleurisy is always serious and should be so considered. Physicians would be surprised if they were to look up the pleurisy patients treated from ten to fifteen years before which apparently made a good recovery; for it would be found that at least half had since died of tuberculosis. In taking the history then ascertain if the patient has ever had pleurisy; if such is the case it should be a great aid in clearing up the diagnosis. History of having had pleurisy is second only to that of blood spitting and when either of them has been present in the past the physician need not have any great fear of making a diagnosis of tuberculosis. Certainly when there are other symptoms which will help confirm it.

If every physician would place more importance on the history and symptoms and use them more extensively more cases of early tuberculosis would be discovered. There is no symptom which is pathognomonic of the disease, but when all are studied together they will prove the most valuable aid we have in the diagnosis of tuberculosis and at a time when it will be of the greatest benefit to the patient and those with whom he comes in contact, as well as satisfaction to the physician..

Subacute Bacterial Endocarditis Complicating Pulmonary Tuberculosis*

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It is universally recognized that cardiac affections rarely complicate pulmonary tuberculosis and with the exception of congenital heart lesions the two conditions do not often coexist. As a terminal process endocarditis is not unknown and there are cases on record where the tubercle bacillus itself was found to be the etiological factor. There are, however, very few case reports of subacute bacterial endocarditis complicating a tuberculous pulmonary process. The paucity of such reports is due primarily to the fact that this form of endocarditis has only recently engaged our attention. On the other hand, it is possible that because certain manifestations of pulmonary tuberculosis may give rise to symptoms not unlike those of this malignant cardiac affection, the existence of the latter may often have been overlooked and the ultimate results ascribed to a fatal reactivation of pulmonary tuberculosis. It may, therefore, be of interest to record the case that came under our observation, calling attention at the same time to the salient points in the differential diagnosis.

CASE.—A. P., a Russian tailor, aged twenty-six, entered the sanatorium on September 3, 1918. He stated that he had been in excellent health until three months prior to admission when he had a sudden brisk hemoptysis. Blood streaked sputum continued for several days. After a rest at home for two weeks he returned to work only to have another hemoptysis of eight ounces five days later. At this time patient began to complain of moderate night sweats, cough, expectoration and tiredness, and these were his chief symptoms when first seen.

Physical and röntgenoscopic examinations on admission disclosed a tuberculous involvement of the right upper lobe and left apex. There were no abnormal heart findings. A left internal strabismus was ascribed to a disease in childhood. His sputum contained numerous tubercle bacilli on repeated examination. The urine showed an occasional trace of albumin while the specific gravity ranged between 1008 and 1024.

He had repeated attacks of hemoptysis as well as frequent rises in the afternoon temperature during the first four months of his stay at the sanatorium. The pulse ranged between 76-92 in afebrile periods and between 90-112 when febrile. Cough and expectoration continued unchanged. A severe attack of influenza in the early part of December, 1918,

*From the Bedford Sanatorium for Incipient Tuberculosis, Bedford Hills, N. Y.

confined him to bed for six weeks. At this point patient began to improve in every respect. There was an amelioration in all his symptoms, the temperature remained within normal limits for the rest of his stay at the sanatorium, he gained in weight (fourteen pounds), tubercle bacilli could no longer be found in his sputum and he left the sanatorium with disease apparently arrested in September, 1919.

Second entry March 10, 1923. Patient had been feeling well and working until the latter part of December, 1922, when he had another severe attack of "influenza" which confined him to bed for four weeks. Since then he said he had been running fever which often reached 102° in the afternoon and while his cough and expectoration were comparatively mild he felt he was getting progressively weaker. He complained of pain over the chest and particularly over the sternum while the shortness of breath was the most distressing symptom.

Physical examination disclosed a dyspneic, somewhat emaciated young man with dusky sallow pallor and slightly clubbed fingers. The lung lesion had not appreciably increased. There was evidence of pulmonary emphysema. These findings were corroborated röntgenographically. A systolic murmur best heard at the apex and transmitted to the axilla was noted. No cardiac enlargement could be made out on physical or röntgenological examinations.

While at the sanatorium patient was very toxic. His afternoon temperature ranged between 102-104 with a daily swing of one and a half to three and a half degrees. His pulse was regular and of good quality and ranged between 96 and 120. There was occasional blood streaked sputum. The cough and expectoration were not distressing but the dyspnea grew progressively worse. There was great tenderness over the precordium and particularly over the sternum. His sputum contained tubercle bacilli on one of five examinations, and his urine showed faint traces of albumen on all of five examinations and hyaline and granular casts on one. The specific gravity ranged between 1008 and 1020. Blood pressure 116-84. Blood smears failed to disclose Plasmodium malariæ.

On March 25th the patient complained of a very severe and boring pain in the right hip joint. This was not accompanied by tenderness on pressure or motion. There was slight rigidity of the abdominal muscles on the right side and marked tenderness at the right iliac fossa. The septic temperature continued in spite of therapeutic efforts. The sternal tenderness increased and the dyspnea became much worse. The lung signs were stationary. Pulse ranged between 96 and 120, regular and of fair quality. There was continued loss of weight and strength.

Lumbar puncture revealed clear fluid under moderate pressure with normal cell count. The blood culture on April 16th disclosed an organism of the pneumococcus group.

In addition to the recently noted edema of the legs, marked swelling of the face was seen on May 9th. There was also an extensive petechial eruption on the forehead, face and legs which later spread all over the body. A second blood culture was returned positive for Streptococcus anhemolyticus. He grew progressively weaker and died on the evening of May 15th. Postmortem röntgenographic examination of his chest disclosed a very large, apparently dilated, heart with a moderate hydrothorax on the right. The tuberculous lung process was apparently unchanged.

It is a matter of common knowledge that periodical exacerbations of clinical activity are among the salient features of pulmonary tuberculosis. On the other hand the assumption that most acute toxic symptoms in a tuberculous patient presenting some signs in the lungs can be ascribed to a reactivation of a quiescent lung process has often led to error. Indeed many patients are readmitted to sanatoria on the basis of such assumption when in reality they suffer from a nontuberculous condition not even remotely connected with the respiratory system.

Here is a patient who, three and a half years after his discharge from the sanatorium with his lung lesion in an apparently arrested condition, is readmitted on account of a supposed reactivation of his tuberculous process. From the very start, however, it seems that we were dealing here with a nontuberculous complication. There was no increase in the amount of lung involvement on both physical exploration and röntgenological examination of the chest. Moreover, evidence of a tuberculous complication such as enteritis, meningitis or miliary tuberculosis which could be held accountable for the symptomatology was entirely lacking. Septic foci sufficient to account for the trouble could not be found. Malaria was ruled out by blood examination and therapeutic test and the possibility of the existence of typhoid could be eliminated in view of the long duration of the febrile period. The heart was not enlarged and the systolic murmur heard at the apex and transmitted to the axilla was at first not considered seriously because such murmurs are so often heard in tuberculous patients who, to our best judgment, are not suffering from organic heart disease.

However, when the patient's complaints were gone into more carefully the discovery of the murmur assumed a greater significance. The marked dusky sallow appearance of the patient, the dyspnea in the absence of a progressive lung process or tuberculous complications, the dull aching pain and tenderness over the sternum and the rapidly progressive anemia and asthenia could not in this case be explained on the basis of tuberculosis and pointed to the possibility of septic endocarditis. Finally the occurrence of the sudden sharp, boring and excruciating pain in the region of the right hip a few days after admission suggested an embolus secondary to endocarditis. The heart findings, subsequent course and positive blood cultures determined the true nature of the affection.

SUMMARY

1. Acute nontuberculous conditions in the tuberculous are often mistaken for reactivation of quiescent pulmonary foci.

2. While cardiac affections in the tuberculous are quite infrequent they do occur and should be kept in mind whenever symptoms and signs referable to cardiac disease are elicited.

3. A case of subacute bacterial endocarditis in a tuberculous individual is described. The similarity in the symptomatology of the two diseases and some points in the differential diagnosis are considered.

Croup: Its Differential Diagnosis and Treatment*

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The service of the Kingston Avenue Hospital provides a wealth of information pertinent to the subject of croup. The tremendous importance of the subject is evident since frequently a life hangs in the balance, and a rapid, correct diagnosis determines which way the scales will swing.

It is not a chronic ailment, in which we are interested, where differences of opinion and delay are not of momentary importance, but we are troubled with a hyperacute symptomatology, where at times life is threatened by a few hours' delay.

It has been our experience again and again that patients sent to us with a diagnosis of laryngeal croup have to be reclassified by our service. This difficulty of differential diagnosis is at times troublesome even for those who have been concerned with this problem for years. So it is quite evident that we are dealing with an affection in which a fatal outcome is often immediate. Its recognition is extremely difficult, offering great embarrassment to those who see few such cases and many perplexities to the experienced.

In considering the various diseases which give rise to the classical signs of laryngeal stenosis, I wish to confine myself particularly to those the onset of which is sudden and the course rapid. We are not here concerned with chronic stenosis as seen in the presence of malignant glands of the neck, epithelioma of the esophagus, enlarged thyroid, or mediastinal tumor. In approaching a case in which we are to determine the presence or absence of laryngeal croup, we observe that in the greater percentage of cases little difficulty is encountered. It is the smaller group of cases that especially interests us.

Before entering into the discussion of the individual diseases, that are frequently confounded with true laryngeal croup, I wish to give a brief résumé of the important phases of this serious malady.

This picture will be used as a basis in the differentiation. It is important to note that, although the laryngeal involvement is often primary, nevertheless in the majority of cases it is secondary to nasal, faucial or tracheobronchial diphtheria. We can divide the drama into three acts: 1. Stage of invasion. 2. Stage of spasm. 3. Stage of asphyxia.

In the stage of invasion it is not uncommon to have the child running about for a day or two with an angina or a purulent nasal discharge, when suddenly hoarseness and difficulty in breathing supervene. It is both interesting and of significant value to observe at this stage, whether the croup is primary or secondary, that a negative culture is often obtained. Slowly and persistently the child progresses to the spasmodic or exudative stage. In the early part of this period, a pseudomembrane may appear and spread so quickly, that within twenty-four hours symptoms of marked stenosis may become evident. The first stage in the scene is slight hoarseness, which may progress to aphonia. We must not place too much reliance upon this phenomenon, for, as has been pointed out by the late Dr. Lynah, many of the laryngeal croup cases may present a normal or slightly altered voice, depending on the location of the membrane in the larynx. The constant irritation by the pseudomembrane and toxin upon the superior laryngeal nerve brings on a cough, which may even at times become paroxysmal in character. As several hours elapse, the respiration becomes noisy and harsh. The inspiratory phase of the respiratory murmur becomes prolonged. The expiratory phase is harsh and a definite pause separates the two phases. Although the inspiration becomes prolonged, the amount of air entering the lungs becomes markedly diminished. The train of symptoms progresses until we get the dreaded picture of stenosis. All the accessory muscles of respiration, the scaleni, intercostals and diaphragm, are brought actively into play. It is of value and interest to mark, that in spite of the dyspnea, the respiration rate is about normal, being in the neighborhood of 18-20 a minute. On direct examination of the larynx by means of the laryngoscope, we find that the vocal cords are covered by a membrane and are practically in contact with one another. In untreated cases in which antitoxin has not been administered, the stage lasts from twenty-four hours to one week. The climax is that of asphyxia. Here we have a combination rôle of both stenosis and toxicity. The respirations become more and more rapid, irregularity increases, and violent irregular contractions of the accessory muscles of respiration are necessitated. The pulse, poor in quality, begins to drop several beats with each inspiration, foretelling that the end is not far distant. The face and lips become livid and a cold perspiration breaks out. Death is due to carbonic acid poisoning, bronchopneumonia or cardiac dilatation. A fatal termination is seen in ninety-five per cent. to ninety-eight per cent. of all untreated cases. I have described the course of the common variety of laryngeal croup, omitting the phlegmonous and septic forms.

The most frequent condition that is met to confound us, is the socalled false croup, often known as spasmodic croup or laryngismus stridulus. The latter is the name selected for the severe form of the ailment, particularly seen in weak, debilitated or rachitic children. At times this may even progress unto death. Here all the acuteness, intelligence and experience of the observer are severely taxed. Not only is the diagnosis important as to prognosis but even more so as to treatment. What are the differential points? What are the characteristics that indicate a diagnosis? I will summarize them in a didactic manner, feeling that only in this way will an indelible impression be made. It is important to comprehend, that in a child the larynx is relatively smaller in its relation to the general bodily development than are any of the other organs, so that the least amount of swelling of the mucous membrane necessarily causes an encroachment on the laryngeal

*From the Kingston Avenue Hospital of the Department of Health, New York City.

lumen. The glottis is predominantly involved because of the particularly loose attachment of its mucous membrane.

Due to adenoidal infection, constant dripping of secretions into the pharynx and into the larynx keeps up a continuous irritation with resulting involvement of the glottis and secondary precipitation of spasms. The swelling of the mucous membrane, especially near the vocal cords, is quite frequently noticed with the laryngoscope. In making inquiries concerning the child's history one can usually elicit the information that, as out of a clear sky, hoarseness and croupy signs appear. The attacks usually come on during the night. But this by no means is the invariable rule. At times there is no history of an inflammatory process existing elsewhere, but as a thunderbolt, the child suddenly awakens during the night with a characteristic croupy cough and dyspnea. Once more let me repeat, that just as in laryngeal croup, the voice may or may not be altered at all. In the greater proportion of cases, as night approaches, the voice becomes raspy and metallic in character, often accompanied by a short cough, and within several hours the typical spasmodic picture is arrived at. Sometimes before the actual spasm makes itself manifest, we note physically an inspiratory dyspnea and a peculiar stridor, which may go on to marked cyanosis or even necessitate immediate intubation. In between spasms little or no hoarseness is heard and the child's color and pulse are again in a good physiological state. There may be several such attacks, especially during the night, each lasting from a few minutes to several hours, terminating abruptly. I wish to recapitulate in a concise manner the differential points in favor of false croup.

1. There may be a short history of inflammation elsewhere, characterized by a nasal discharge or a slight cough.
2. The attacks are usually seen during the night.
3. The onset is sudden and the termination is abrupt.
4. There is usually no fever.
5. The symptoms are not as progressive and as persistent as in diphtheria.
6. The color between spasms is good.
7. The cough is metallic and not that of croup.
8. There may be several such similar attacks during a single night.
9. Unlike diphtheritic croup, the spasm rarely progresses to intubation.
10. There is no membrane on the tonsils, throat or in the nose.
11. There is an absence of glandular enlargement, i. e., submaxillary and cervical.

Many cases often come under our care, which are classified purely as catarrhal laryngitis showing most of the symptoms noted, but instead of no or little temperature, we have a fairly high level, reaching as high as 103-105° F. It is often this catarrhal condition, that gives rise to the spasmodic attacks and general symptomatology noted in the observations on false croup.

In completing the discussion of false croup, we are now ready to consider conditions, which are not as frequent but nevertheless of great importance. The consideration of aspirated bodies has in the past shown itself to be of such momentous concern, that I will review a case which was seen in the Kingston Avenue Hospital several years ago.

Case.—A child seven years of age was admitted to the Willard Parker Hospital with the following symptoms: croupy cough, marked retraction, a temperature of 103° F., and a pulse of 140. A diagnosis of croup was made and antitoxin was administered. The child was ill for several days and was finally transferred to the Kingston Avenue Hospital. While here the resident physician, Dr. Cannon, in making rounds, noticed a swelling in the middle of the larynx. A diagnosis of perilaryngeal abscess was made, and on opening the abscess, he noticed a foreign, bright body, which fell deeper into a bronchus before he could grasp it. Dr. Lynah by means of a bronchoscope removed a safety pin.

I will describe briefly the average clinical picture of a child, who has aspirated a foreign body. A perfectly healthy child, while playing, is suddenly and abruptly seized with an attack of coughing, dyspnea and cyanosis. The dyspnea may be so severe and acute, that death may ensue immediately. However after the initial attack of coughing, many of the patients gradually and persistently progress to greater and greater degrees of dyspnea and cyanosis. Physically the findings depend on the location of the obstruction. If the impediment is in the larynx, the air hunger is exceedingly urgent and causes grave concern. The color of the face and lips may be livid. The head is thrown slightly back. The child is extremely restless. The excursions of the thyroid cartilage are extensive. The voice is not altered unless the foreign body has caused an edema of the true vocal cords. The dyspnea is inspiratory in type, and the loss of aeration is equal in both lungs. A quite different picture is seen if the obstruction is located below the larynx, especially when a bronchus alone is occluded. Here the patient is usually quiet. The color may be of various shades of cyanosis. The voice remains unaltered and the excursions of the thyroid cartilage are not as extensive as they are in the higher form of obstruction. The neck is slightly flexed and the trunk is somewhat bent forward. The air hunger is not urgent enough to give immediate concern. The percussion note on the obstructed side is that of a high pitched impaired note varying from dullness to flatness. The breath sounds are absent or greatly diminished. The expiratory phase of the respiratory murmur is greatly prolonged. Bronchophony and pectoriloquy are greatly diminished. The x ray plate shows on the side of the obstruction that there is less absorption of the rays than is observed on the unaffected side, because of the imprisonment of air. The foreign body may or may not be been. What shall our attitude be in such cases?

1. The sudden occurrence of dyspnea in a child, particularly coming on during the day, should suggest the idea of a possible foreign body.
2. The sudden onset, occurring within a few seconds, in a perfectly healthy child should again arouse a similar suspicion.
3. The appearance of a slowly progressive dyspnea should also put the observer on his guard.

In the opinion of Dr. Lynah, a bronchoscopic examination for foreign body is indicated in all cases exhibiting a sudden appearance of dyspnea in an

otherwise healthy child, in all cases exhibiting a slowly progressive dyspnea, and in all cases which occur in the day and whose etiology is unknown.

Great difficulty is being experienced in differentiating laryngeal croup from influenzal croup. A similar difficulty in differential diagnosis was found in the 1919 influenza epidemic. In the 1919 influenza epidemic cases were observed by Dr. Regan and the late Dr. Lynah, that were sent to the Kingston Avenue Hospital with a diagnosis of laryngeal diphtheria, but on further investigation failed to show the ordinary course of croup. The immediate characteristics that suggested that another ailment was being encountered, were the facts, that the symptom complex was occurring in an epidemic, that the cases did not respond to massive doses of antitoxin, that none of the patients showed paralysis, that there was no membrane in the nose, throat and larynx. With the foregoing facts in mind as indications, routine examinations of the larynx were instituted with the following findings: The larynx failed to show the presence of a membrane, and instead it was fiery red in color. The ventricular bands and vocal cords were edematous and a stippling of whitish spots was seen on the deep red background. This picture was particularly noticed in the severe streptococcic forms. In this type the edema was supraglottal and interfered with the respirations. In other cases similar pathology was observed to be subglottal and tracheal. Few patients showed the involvement of the bronchi and in others the entire passageway was affected. The symptoms began with a chill, dry cough, vomiting, aches in the lumbar muscles and extremities, and increased secretions from the nose and the conjunctiva. Within two to ten days from the onset, croupy symptoms began to appear, progressing even unto laryngeal stenosis. In mild forms the hoarseness and croupy cough cleared up, but in the severe types, with or without pneumonia the process often went on to stenosis. Even as early as twenty-four hours from the onset, hoarseness and croupy cough developed in some of the cases. Within a few hours difficulty in breathing became evident.

From here on if the case progressed, all the scenes depicted in laryngeal diphtheria were reenacted. If a pneumonia was present, we found that the aeration was diminished and a moderate number of musical râles was heard. The throat was congested but there was seen no purulent discharge from the nose. The mouth, tongue and throat were red, dry and glossy. There was no enlargement of the glands. On culturing the secretions from the nose and throat, Pfeiffer's bacillus was most frequently found with the micrococcus catarrhalis and pneumococcus a close second. Therefore to differentiate laryngeal diphtheria from influenza croup, a thorough history as to the onset, particularly as to nasal and conjunctival discharges, headaches, chills, pains in the lumbar as well as the muscles of the extremities are carefully to be observed. A rigid physical examination and history of exposure in the presence of an epidemic must be obained. The absence of a membrane in the throat and he presence of a dry, red glossy mouth, tongue and hroat should be observed. A laryngoscopic examnation should finally complete the investigation. All his should be done to clinch the diagnosis of inluenzal croup. We urge care in this differential, for so much depends upon this. Intubation usually does not relieve, but on the contrary increases the congestion in the larynx and as a result the efforts of inspiration are more seriously impeded. The croup kettle, atropine, morphine, adrenalin, flax seed poultices to the neck and mustard paste to the chest in cases complicated by pneumonia, are apparently of great value.

There should be no difficulty in differentiating croup from retropharyngeal abscess. But due to the failure of examining the throat with the finger or due to oversight, patients have been admitted to the hospital deathly sick, in whom treatment along lines of diphtheria had been instituted. Usually following some infectious process in the nasopharynx, the lymphatics draining into the retropharyngeal lymph glands infect them. These glands become larger and larger and as a result the pharyngeal wall is pushed forward. The swelling is usually lateral to the median line, for the glands are situated there. The clinical history is that of a child usually under one year of age, although cases are seen at three, who has been ill for several days with a nasopharyngitis. Suddenly difficulty in swallowing and at times even regurgitation through the nose occur. Along with this respirations are impeded. There is often heard a gurgling, spluttering sound as though there is mucus in the larynx. This is not to be confused with stridor. The respiration through the nose becomes obstructed and snoring results. As the case progresses, pressure on the larynx ensues and dyspnea begins. Hoarseness is not heard but the voice takes on a nasal quality. The head is thrown back, usually to one side, and the mouth is held wide open. Physically one can see a mass, lateral to the median line, pushing the retropharynx forward. On palpation the swelling is confirmed as located retropharyngeal. Treatment should be surgical only.

Although it is conceded that the bulbar form of polioencephalomyelitis is of infrequent occurrence, it nevertheless is one of the affections that must be differentiated from laryngeal croup. Great difficulty is often experienced in making the differential diagnosis.

Early in the disease there is an irritation of the recurrent laryngeal nerve. This is manifested by an abductor paralysis of the vocal cords. There is observed a stridulous inspiratory dyspnea due to the spasm of the glottis. When the nerve finally passes from the irritative to the destructive stage, we find that the symptoms then depend upon an abductor paralysis. The dyspnea, inspiratory in nature, becomes a matter of exceedingly grave concern. If a complete examination is made, the findings of a basal nuclear involvement of the cranial nerves will be found. The fifth, seventh, ninth, eleventh, twelfth and frequently the second and third nerves are implicated. These findings together with examination of the cerebral spinal fluid definitely and conclusively make the differentiation.

Often complicating scarlet fever, measles or whooping cough there are seen symptoms, which clearly point to impairment of respiration. But, keeping the symptoms of these particular diseases in mind, there ought to be no difficulty in explaining the symptoms and prescribing treatment adequate for each of the diseases in question.

SUMMARY

1. That there are many ailments that disguise themselves as croup.

2. Before making a diagnosis of laryngeal croup, it is necessary to carry out a complete and thorough physical examination in order to rule out stimulators.

3. If there is any doubt in diagnosis as to the presence of diphtheria even if the symptoms are not of a stenotic type, antitoxin should be administered. There can result no injury from such a procedure.

A New Technic for Investigating Maxillary Sinuses by X Rays

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The problem of obtaining x ray pictures of clear maxillary sinuses without showing superimposed tissue and bony structure has occasioned a search for a better technic. As a result of my research work along these lines, I have devised a new technic which gives a clear and truthful x ray picture of the maxillary sinuses.

The usual technic for maxillary sinuses consists of anteroposterior views in which the patient is placed in position as follows:

The head is placed on a horizontal plane with the nose and chin in contact with the plate. The cone of the diaphragm is centred on the same plane over the region of the occiput. The object of this position is to throw the malar bones out of the field of the sinuses. Likewise the mastoid regions are thrown upwards. The maxillary sinuses are seen on either side of the face at radiolucent areas but these radiolucent areas are composed of shadows of the posterior portion of the skull as well as shadows of the malar bones and intervening tissues. Even when great care is exercised in radiographing the sinuses by this technic heterogeneous shadows cannot be excluded and tend to give a hazy appearance to the antra.

An ideal representation of the maxillary sinuses is one in which the superimposed bony structure can be excluded from the picture. Because of the bilateral shape of the head, lateral and anteroposterior views cannot give this. The following technic which I worked out focuses the rays upon the head placed in a new position and gives a clear picture of each maxillary sinus with no superimposed bony structure in the field.

The patient is placed on his back with the head tilted backwards, at an angle of 25°. The side to be x rayed is placed on the plate. The tube is tilted to an angle of sixty degrees and the cone is brought downwards and as near to the uppermost mandible as possible.

This position gives a direct line from the tube to the maxillary sinus with a minimum amount of soft tissue and with no superimposed bony structure intervening.

The accompanying cut shows the maxillary sinus appearing as a clear oval cavity. There is no evidence of any bony structure of the face or occiput visible. Note that the superior and inferior molars on the same side are seen in their normal positions, while the molars on the other side are entirely thrown out of the field. The clarity or haziness of the sinuses can be easily discerned by one familiar with reading röntgenograms. The advantage of this technic is apparent by a comparison of a cut representing the usual method of sinus investigation.

It should be added also that the maxillary sinus on the opposite side should always be radiographed with the same technic for comparative study of the suspected side.

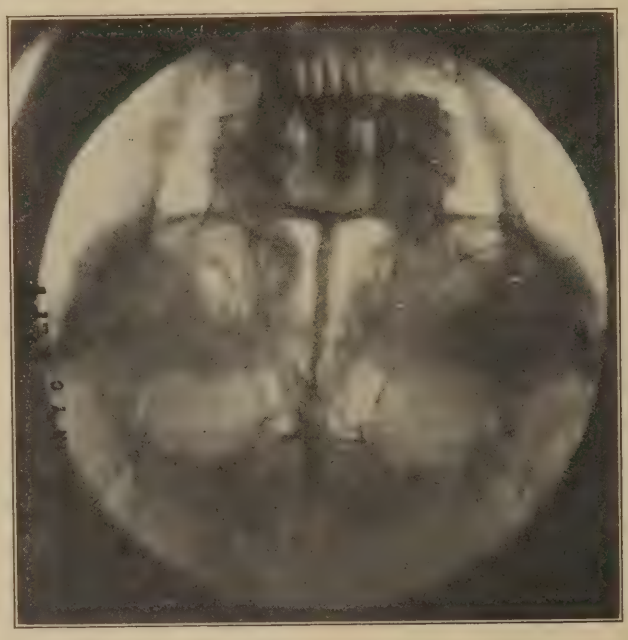

Fig. 1.—Old technic.

Fig. 2.—New technic.

Treatment of Tonsillar Hemorrhage*

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Bleeding following tonsillectomy is not given the serious consideration it deserves. This operation although comparatively safe is not unattended with dangers and may result in serious hemorrhage unless one is properly prepared to meet the emergency. Tonsillar hemorrhage occurs more frequently than is usually supposed, especially now when so many tonsillectomies are performed. Tonsillectomy is a major operation and should be regarded as such, just as much as a hernia or appendectomy. The blood supply to tonsil and neighboring structures is rich.

The causes of tonsillar hemorrhage are usually due to anomalous bloodvessels or to the removal of some of the soft parts, such as the pillars or deep muscle tissue. Hemophilia plays an important part as a causative factor. Bleeding frequently is traced to the leaving of a small piece of tonsillar tissue in the fossa.

Bleeding may be primary, coming on at the time of operation and is the most frequent form, or secondary, occurring from two to ten days after operation. Secondary hemorrhage often results from the tearing away of the slough or necrotic membrane which forms after a tonsillectomy, thus exposing a superficial bloodvessel or as sometimes happens during sudden laughter or screaming the slough becomes loosened from its base, thus disturbing the clot and opening the thrombosed vessel or by disturbing the granulation tissue which forms and helps to fill in and heal the tonsillar fossa.

Tonsillar bleeding may be classified according to degree as follows: Slight when the amount of blood lost does not exceed three to four ounces; moderate when it does not exceed ten to twelve ounces and severe when over twelve ounces.

You will find that sharp cutting instruments will give you more bleeding than dull instruments which crush the vessel. The method used is a matter of personal preference and does not alter the possibility of hemorrhage, every method being subject to the same risks of bleeding. Under local anesthesia it is possible to perform a bloodless tonsillectomy by properly preparing the field of operation, whereas under general anesthesia this is not always possible.

Several remedies have been recommended to improve the coagulability of the blood, prior to operation; as an additional safeguard against hemorrhage, calcium lactate and calcium chloride are examples. It is questionable just how much good they really do. Thromboplastin and hemoplastin given hypodermatically about one hour before tonsillectomy tend to lessen the bleeding which comes from the capillaries. As an added precaution, every patient should have a blood coagulation test made.

In those cases which I classified as slight bleeding, the bleeding will be found to be due to a general oozing which would follow from any ordinary incision. For these cases slight pressure in the tonsillar fossa low down and against the anterior pillar pressing toward the angle of the jaw, with a plain sponge, will often control it in a few minutes. Be sure the bleeding from one tonsil is controlled before removing the other.

In cases of moderate bleeding, pressure may also be used. Where this fails the sponge may be saturated with medicaments such as peroxide of hydrogen, adrenalin, tannic acid, thromboplastin and bismuth subnitrate.

Where the bleeding is severe and the blood is seen to be spurting from a vessel, steps should immediately be taken to control this, just as in any surgical operation. This is done by promptly clamping the bleeding point and ligating it, without even wasting time trying any of the foregoing simpler nonsurgical methods, as a great deal of time and blood will be lost. When the vessels are properly ligated one can leave the patient in safety. Sometimes just clamping the bleeding vessel and crushing it without ligation will control the hemorrhage, but this method is by no means safe.

One frequently encounters a case where the bleeding does not come from any definite vessel, but there is a steady constant oozing. This usually occurs as a result of the soft parts surrounding the tonsil having been included in the tonsillectomy, removing muscle tissue, pillars or parts of the soft palate. For these cases, if the patient is in good condition, I should try the simpler methods first but, on the other hand, when you are called to see a patient who has lost considerable blood, you must act more radically to control the bleeding. This is best done by suturing the tonsillar pillars together over a gauze sponge, which is left in position for thirty-six to forty-eight hours when it is carefully removed.

In conclusion, I wish to state that a great deal of trouble and anxiety can be prevented by: 1. Ascertaining the general condition of the patient and his susceptibility to bleeding, by doing a blood coagulation test. 2. Selecting the proper instruments. 3. Being careful not to leave stumps at base of tonsil. 4. Making sure that one tonsillar fossa is absolutely dry and not bleeding before attempting the removal of the second tonsil. 5. Last and most important, that a tonsillectomy should not be considered finished unless all oozing and bleeding has been visibly controlled while the patient is still on the operating table.

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*From the Department of Laryngology, Beth Israel Hospital.

The Convalescent Treatment of Lung Abscess

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In this brief paper it is our object to report an experience with seventy-eight consecutive cases of lung abscess convalesced at the Burke Foundation country home during the past seven years. When the institution first opened a somewhat hopeless view was given of lung abscess in our field, but methods of diagnosis and treatment have gradually improved.

Recent articles by Lockwood, Hedbloom, Bettman, Meyer and others have gone into much detail, and especially in the first named will we find this disease fully discussed. The recent writers discuss the treatment—medical, surgical or otherwise, but the long aftercare period between the time of discharge from hospital and the resumption of occupation, or the relapse and return to treatment, is almost entirely ignored. In a personal letter from Lockwood he recommends long aftercare (one to two years) in a dry, sunny climate, but prefers not to move the patient too far from the zone in which he intends to make his livelihood.

How are any, excepting the wealthy, to receive such care? There is nowhere provision for the majority. The average patient is treated in hospital and when ready for the long term recuperation is sent to relatives or friends, or to a boarding house, continuing for a time the usual desultory dispensary treatment. Few enter convalescent homes, which at present are not well equipped to take care of these cases properly and over long periods. In most instances the patient soon returns to the city in very poor condition, without funds and unable to work. Frequently relapse or intercurrent disease overtakes him and he is returned to hospital. Here he soon becomes ambulatory, is discharged, and the cycle starts again, making what Frankel has aptly called "a class of people who are half cured."

Right employment and skilled aftercare are most important in consummating cure in lung abscess, or in obtaining reasonable extensions of their handicapped careers. These patients often look so well after country recuperation that too strenuous occupation is insisted upon, with disastrous relapsing. Even the trying ordeal of job seeking should be avoided, and advance arrangements made for right employment, environment and social regime. In this phase the cooperation of Social Service and the Employment Bureau for the Handicapped have proved invaluable in the New York district.

The following outline of the daily routine at the Burke Foundation Home (varied somewhat to fit patients' conditions)will indicate the main restorative elements in this country rest-play-work therapy: Rise at 6:30, walk or sit out, breakfast at 7:30, bedmaking and light cottage duties, morning papers, smoke (but little restricted), library, walks, games indoors and out, light gymnastics for some, milk at 10, prescribed occupation therapy 10:30 to 11:30 (mainly outside), rest or play till dinner at 12:30; rest hour on bed 1 to 2; afternoon free, but with directed mild outdoor games and various walks, recreations and occupations; supper at 5, evening dances and entertainments (outdoors seven months of year), lights out at 9 p. m. Extra milk and olive oil are often prescribed for these patients The diet (fully studied in a special report now available) is moderate in meat but ample and balanced. The lung abscess patients are more rested, given lighter occupations and recreations, urged to walk and sit outdoors, and generally watched more closely and held for longer stay than others.

In this series of seventy-eight cases, only forty-one could be traced over a period of six years, through followup workers.

AGE TABLE

Under 20	6	7.6 per cent.
20 to 40	53	67.8 per cent.
40 to 60	17	21.7 per cent.
Over 60	2	2.5 per cent.

Over two thirds were between the ages of twenty and forty, in the socalled prime of life.

Of the seventy-eight patients, twenty-five received operative treatment, forty-eight medical treatment, and five treatment by bronchoscope.

The number readmitted to this one institution gives some indication of the tendency to recurrence and the need of more prolonged treatment and observation. Seventeen were readmitted once. Ten were sent out twice or more.

End results in this dread disease have heretofore been little reported upon. The following table is instructive:

FOLLOW-UP RECORDS

Reported fully cured	21	51.2 per cent.	
improved	13	31.9 per cent.	
sick	4	9.8 per cent.	
died	3	7.1 per cent.	
Total follow-up records received			41
In full occupation	20	48.8 per cent.	
In part time occupation	8	19.5 per cent.	
Improved, no occupation yet	6	14.6 per cent.	
Unclassified	7	17 per cent.	

This eighty-three per cent. reported cured or improved gives a decidedly more encouraging picture than is usually presented. It is thought, after full consideration, that the thirty-seven cases which could not be followed long or accurately would not differ materially from the above in terminal conditions.

GAIN IN WEIGHT

Number who gained in weight	62	79.4 per cent.
Number who lost	13	16.7 per cent.
Number remaining stationary	3	3.7 per cent.
Total weight gain	470 lbs.	
Total weight loss	31 lbs.	
Average weight gain	5.6 lbs.	

Many patients come full weight and tissue soft from forced feeding and inaction, and a slight weight loss may go with an excellent convalescent result.

*Note: A complete bibliography will be published in the author's reprints.

PERIOD OF COUNTRY CONVALESCENCE

	Average Length of Stay	In Full Occupation (Follow Record)	Part Occupation	Improved No Occupation Yet	Sick	Died	Gained Weight
All cases	31 days	48.8	19.5	14	9.8	7	5.6
Long stayers (over 20 days)	37 days	64.5	19.3	12.9	3.2	0	6

It is agreed that the length of their country resilence should run into months; but various home nd economic conditions interfere with this ideal. Ve must then depend upon skilled aftercare and lirection following the patient for a long time hrough home and industrial conditions.

The pressing need now is for the establishment of special new type of lung convalescent institution. Ve may quote from Sinclair: "Experience in genral convalescence soon shows that certain kinds of espiratory disease continue to "fall between" all resent relief efforts. They may be called the lung orderliners. Lung abscess, the pretuberculous, the rrested tuberculous, some cases of chronic bronhitis, bronchiectasis and asthma, reoperative and rippling empyemas, fibrosis, and the severer pleuisies. Many of these persons markedly retard the ecoveries of those about them because of disturbng cough, odor, night distresses, contagion fears, tc. They tend to create unfavorable atmosphere in he mixed grouping. Furthermore, they are freuently not thoroughly diagnosed, make little progess, may actually prove contagious, and are really misplaced—or unplaced. In this new institution a moderate amount of "lung atmosphere" would be accepted and well managed, with no "san" stigma following. Diagnoses could be expertly confirmed and patients rightly replaced, special treatments and research carried out, preventive recuperations fully consummated, etc. The lung abscess perhaps best typifies this entire class. This condition is being increasingly diagnosed with the newer procedures, is treated in the hospitals with growing hopefulness, and then essentially falls by the wayside on discharge. Thirty to fifty beds, taking patients of both sexes from fifteen years upwards is suggested scope of the place at beginning. The average stay would be fairly long, and costs a little higher than standard convalescence."

SUMMARY

Since the completion of this study increasing numbers of lung abscess patients have been here convalesced, and with steadily improving end results. More reports by others from the years long follow-up of this disease are much to be desired.

Failure to convalesce fully, and then to readjust these patients in suitable occupations and modes of living is causing too frequent relapse, waste of effort and reproach to the medical profession.

It is proved that standard country convalescent homes can assist greatly in the cure or amelioration of this disease. There is, however, sore need for special respiratory country institutions functioning between these and the tuberculosis sanatoria.

The author's references will appear in his reprints.

Incidence of the Kahn Flocculation Reaction in Tuberculosis*

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Los Angeles, Cal.

Among the numerous serum floccule forming rections devised for the serological diagnosis of syphis is that proposed by Kahn (1).

A factor of importance in the evaluation of any iboratory procedure is the determination of the inidence of its occurrence, not only in the particular ondition for which it was devised, but also in other onditions; in other words, are false positive rections obtained in other conditions, and, if so, how ften?

Tuberculosis is one of the numerous conditions hich have been reported, in the older literature, as iving a positive complement fixation reaction with yphilitic antigens. Though this has since been iown to be incorrect, it seemed of possible interest uring the course of an investigation of complement xation reactions in tuberculosis the results of which ill be published elsewhere, to apply the Kahn test the sera under observation.

Because of the numerous, though perhaps imortant, modifications which have followed the origal publication of this test, it is essential to note iat the tests herewith reported were made in accordance with the technic of the original publication and with anitgens kindly furnished by Dr. R. L. Kahn.

The Kahn test was made upon seventy sera from cases of known tuberculosis in varying stages of activity. The sera were never older than forty-eight hours, were all clear, and all inactivated for fifteen minutes at 55° C.

Completely negative results were obtained with all but four of the sera tested.

In two of the cases giving a positive Kahn reaction, both the history and the complement fixation test for syphilis by Kolmer's quantitative method were negative.

In the other two cases in which the Kahn test was positive the Wassermann test by the quantitative method was also positive. One case presented a secondary rash and the other had a history of an initial lesion thirty-five years before.

The series is, of course, too small for any definite conclusions but suffices to show that the Kahn reaction does not appear to occur in tuberculosis with undue frequency.

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*From the Laboratories of the Pittsburgh Hospital.

Angioma of the Larynx*

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This case is reported because of the rarity of this particular neoplasm as found in the larynx. John Phillip and H. O. Ruh, in reporting a case in 1913, traced twenty-six cases in the world literature. Emil Mayer reported a case in 1916, and after careful search he brought up the total number of cases reported to that date to forty-one. New and Clark, in 1919, reported three cases from the Mayo Clinic; and after reviewing all the previous cases to that date, brought up the total to fifty-five. Irwin Moore read a paper at the Second Annual Summer Congress of the Section of Laryngology, Royal Society of Medicine, on June 25, 1920, in which he offered a critical review and a general treatise on the subject of angiomata of the larynx, and in that paper he traced seventy-three cases which included two or three of a doubtful character where the diagnosis was not conclusively proved. Since that date the following two cases have been found in the literature. The first, a case of hemangioma of the larynx, was reported by T. H. Sweetser.

CASE I.—The patient was a baby boy who was born prematurely at eight months and died at the age of sixty-two days. Up to the age of nine days the boy appeared to be normal; after this he had a series of attacks of cyanosis with poor respiration,

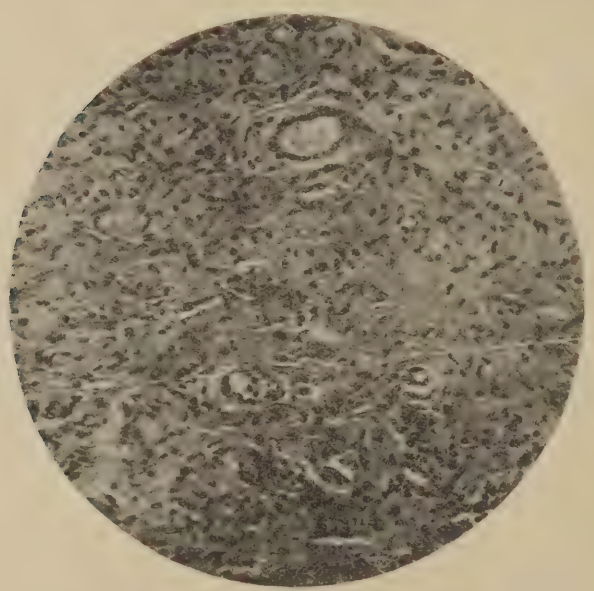

FIG. 2.—Photomicrograph of tumor showing numerous thin walled bloodvessels.

tachycardia and cardiac arrhythmia. Administration of oxygen relieved the condition. Milk was regurgitated, deeply colored red. From that time improvement was continuous and he left the hospital gaining in weight and nursing from the breast regularly. Five days before death the child had difficulty in breathing which was thought to be an asthmatic attack, and later a diagnosis of laryngeal diphtheria was made. Intubation was attempted without success. On autopsy, the hemangioma was found which occupied the entire circumference of the larynx, with the exception of a narrow zone, at the posterior commissure.

J. B. Cavenagh reported a case as follows:

CASE II.—Male, aged thirty-two years, had suffered from hoarseness, with momentary periods of aphonia, since 1916. A diagnosis of tuberculosis had been made and the patient sent to a sanatorium for several months. He was seen by Dr. Cavenagh in 1921 and on examination a pedunculated tumor, the size of a small bean, was found situated over the anterior commissure which prevented the proper approximation of the cords. The growth was removed by the direct method with good results and the microscopic examination showed it to be a hemangioma. Hence, as far as known, the number of cases reported totals seventy-six.

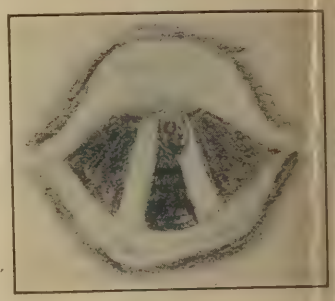

FIG. 1.—Showing larynx congested and ventricular bands edematous.

CASE III.—X. Y., aged forty-two, born in Russia, male, merchant by occupation, married eleven years, no children. Father and mother were alive and well; one sister died at the age of twenty-six of tuberculosis; one brother died at the age of thirty-eight from cerebral hemorrhage; one sister died at forty from nephritis; one brother alive and well.

The patient had had measles and smallpox at the age of four. His habits were good. Fourteen years ago he had had a cough, with loss of weight and night sweats, and the condition was at that time diagnosed as a double apical involvement. There were no pulmonary hemorrhages at that time. Sputum was positive for tubercle bacilli for five months. No history of any venereal diseases. Three years ago he had a lame right leg which was ascribed by the attending physician as due to ulcerative enteritis (?) (Abrams's method). After this cleared up the serological examination was four plus positive for lues, which, after intensive specific treatment became negative and has so remained until the present date. The patient was also subject for a long time to frequent colds in the head and occasional attacks of sore throat.

Present complaint dates back to July, 1922, four months previous to the date when he was first seen. The patient suddenly expectorated about a tablespoonful of bright red blood. He believed this to come from the throat. The same recurred a week later following bathing in the ocean. His chest was examined at the time by the attending physician who could not find in the chest the reason for the hemorrhages. From then on the patient had hemop-

*Case presented before the Section of Rhinology and Larynology of the New York Academy of Medicine, December 27, 1922.

tysis every second or third day, varying in intensity, but never of any alarming degree, up to the time of the examination.

On examination of the larynx, on November 13, 1922, on high phonation, there was found a small sessile neoplasm, larger than a hempseed, somewhat elongated, the surface being nodular, bluish red in color, resembling a raspberry in appearance. This neoplasm was situated at the anterior commissure covering about one fourth of the anterior portion of the left vocal cord. On phonation it prevented full adduction of the vocal cords. The larynx as a whole was congested and the ventricular bands slightly edematous (Fig. 1). On November 17, 1922, a piece of the neoplasm was removed and submitted to Dr. E. P. Bernstein for examination who reported as follows: The surface epithelium was found to be normal. The submucosa was occupied by the loose connective tissue network in which were a few small round cells and numerous thin walled bloodvessels. There was no evidence of malignancy or tuberculosis. A diagnosis of angioma was made (Fig. 2).

There was moderately active bleeding after this procedure, which was easily controlled by the galvanocautery. As a result of this the hemoptysis ceased to recur. On November 17th, after having ascertained the nature of the neoplasm, the galvanocautery was reapplied.

The subject of angioma of the larynx has been so well covered by men who previously reported this condition, particularly by New and Clark, Irwin Moore and Blumenfeld, that to go into it again would be mere repetition. Those interested in the subject are referred to the two last named authors whose articles are most illuminating. Briefly speaking, one can say that the etiology of this condition is believed to be congenital in character, even though local manifestations do not occur until later in life.

With a history of hoarseness, repeated hemorrhages with no accountable source, and the presence of a neoplasm anywhere in the larynx, one must always bear in mind the possibility of an angioma. No standard treatment is advised, and one must judge each case on its own merits. When the tumor is large, the removal of a specimen, even for diagnostic purposes, is fraught with a considerable amount of danger, and deaths have been reported. Hence, in these cases, one has to choose between expectant treatment, laryngofissure or radium. In small neoplasms, similar to the one here described, galvanocautery is considered the proper procedure.

The author's references will appear in his reprints.

The Diagnosis of a Foreign Body in a Bronchus*

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It is usual to begin a discussion of this kind with the history, however I should like to call attention to the fact that foreign bodies have been discovered in cases in which there was no history of aspirating an object. The patient may remember nothing about it, and the body may have entered the air passages without producing coughing or gagging. McCrae (1) mentions a case of this kind in which the tip of an atomizer was aspirated.

Usually there is a history of gagging, choking, coughing and wheezing, sometimes dyspnea and cyanosis, all of which may disappear afterwards, and oftentimes the physician has been deceived by this cessation of symptoms believing the object to have entered the stomach. Later on when other symptoms appear this occurrence is entirely forgotten.

After a few days' freedom from symptoms, there is usually a return of coughing and wheezing. At this time the asthmatoid wheeze which Chevalier Jackson describes is most apt to be heard. This is a peculiar wheezing sound heard during expiration by placing the ear in front of the patient's mouth. The wheeze is drier than that of asthmatic patients. It is heard best at this time because the bronchus is not obstructed; if the body completely obstructs the bronchus it is not heard.

The symptoms vary according to the composition of the foreign body. Organic bodies are prone to cause a severe inflammation with a sudden rise in temperature and clinical picture of pneumonia, death having occurred in a few days' time after the aspiration of a peanut kernel. Inorganic, especially metallic bodies, may remain for months without producing severe symptoms. There is usually a gradual decrease in weight and strength, persistent cough, sometimes hemoptysis. There may be all the signs of phthisis including fever, but there are never any tubercle bacilli in the sputum. There may be slight leucocytosis. Pain is a rare symptom.

The continuous irritation of the metallic body causes swelling of the surrounding tissues which together with corrosion of the metal increasing its size causes obstruction, fever rises and there is abscess formation, bronchiectasis or gangrene of the lung.

Physical signs depend upon the position of the body and the length of time it has been in the respiratory tract, as well as upon its size, shape and composition. Usually the right bronchus receives the body, due to the somewhat larger lumen and steeper course. Almost always it is a lower lobe bronchus. Physical signs are practically always localized in one lung, but cases have been seen in which there are signs in both lungs. They are, however, more diffuse in the unaffected side. If there is no obstruction there may be little or no physical signs but with partial obstruction the first and most constant is diminished expansion on the affected side which McCrea (1) considers the most valuable sign. There

*Read before the Section on the Practice of Medicine at the Medical Society of the State of North Carolina, Raleigh, April 15, 1924.

is also impairment of the percussion note approaching dullness and flatness with increase in secretion, and diminution of breath sounds over the portion of lung below the obstructed bronchus. Medium moist râles, the asthmatoid wheeze and inspiratory retraction of the apices may also be noted but are often absent. With complete obstruction the signs are those of atelectasis.

The x ray is perhaps the most valuable aid, although ten to fifteen per cent. of all cases do not show anything. Metallic bodies are usually seen, but may be obscured after long residence due to accumulation of secretions and condensation of tissue. Unfortunately certain bodies which are usually organic are nonopaque to the ray and cast no shadows. It is in this class of cases that an early diagnosis and removal are most important. Jackson, Spencer and Manges (2) have found valuable x ray changes in these cases, namely increased transparency on affected side, depression of the diaphragm on affected side, and displacement of heart and mediastinal structures away from the affected side. The increased transparency is due to an acute obstructive emphysema. Later when secretions accumulate and we have a condition known as drowned lung there is increased density on the affected side.

Therefore in our diagnosis although most often made from history, symptoms and signs and x ray, we should nevertheless suspect a foreign body when we have a patient with localized symptoms in one lung, especially a lower lobe, with gradual loss in weight and failure in strength, absence of tubercle bacilli in sputum, elevation of temperature, slight leucocytosis, persistent cough, even though no history is obtained, and we should make every effort to disprove the presence of a foreign body. Some have even advised exploratory bronchoscopy when the x ray has shown nothing.

The following case will illustrate some of the points mentioned and some of the difficulties encountered. The patient was a woman forty-six years old, who complained of severe pain in the right side of the chest, cough and fever. She was admitted to the Winyah Sanatorium November 10, 1923. Past and family histories were negative.

The present illness began after a tonsillectomy with general anesthesia (nitrous oxide and oxygen), July 3, 1923. On the following day she suffered from difficult breathing and wheezing, and shortly afterward began to expectorate phlegm. She continued to lose in strength and to feel run down, but did not know whether or not she lost weight until six weeks had passed when she began to run a temperature of 100 to 101°. Her physician then referred her to an internist who made a thorough examination, including x rays, and diagnosed the condition as chronic, fibroid tuberculosis. She was then referred to us by her family physician.

Our examination was made under difficulty. The patient appeared to be suffering from severe pleurisy, and the right thorax was strapped in order to lessen the pain. Examination of the chest naturally therefore showed less expansion on the right side. The percussion note was slightly impaired in both upper lobes and auscultation revealed harsh breath sounds and a few râles which were not constant after coughing. Below the right axillary region there were râles which resembled those seen in acute pleurisy and the pain was severe at that point on deep inspiration. The sputum had never shown tubercle bacilli although we made numerous examinations. The amount of sputum was not large, contained numerous pus cells and had no disagreeable odor. It did not separate into layers upon standing and there was no elastic tissue. The leucocyte count was 14,000; a blood culture was negative. We did not feel warranted in disturbing the patient for an x ray examination, as we had the report of a competent man.

In considering the diagnosis we felt that we were dealing with something besides tuberculosis, because of the sudden onset after the tonsillectomy. We did not deny the presence of an old healed tuberculous lesion, but the long continued fever which ran from 100 to 102° without remission and the absence of tubercle bacilli and absence of marked apical signs suggested something else. Abscess, gangrene or bronchiectasis did not fit the case. Foreign body was thought of, but repeated questioning did not bring out any history.

After several days, however, the patient remembered having lost the crown of a tooth just before the tonsillectomy but did not remember swallowing it, or gagging or coughing at that time, and had forgotten it. This should have been our clue, though we felt sure that a gold crown would have shown in the x ray plate or that she would have choked on it at the time. The pain also was not indicative of it.

The patient exhibited a temperature of over 100°, and a pulse of 90 to 100 for the following week, but her cough seemed less. The pain still continued. A week later the temperature averaged 99°, and the cough was better. She slept at night without the codein tablets we gave her for the cough. Examination of the chest by this time showed less signs than at any time before and no râles at all could be heard. The adhesive straps were removed.

Improvement continued in this manner until December 11th, when the patient coughed violently upon awakening and brought up a gold crown of a molar tooth with a cupful of thick, ropy sputum.

We then learned that she had had a wisdom tooth extracted while under the anesthetic for the tonsillectomy and that the crown from the adjacent tooth had probably been dislodged at this time. Of course being anesthetized she did not gag nor cough. The crown had been mistaken for a large calcified gland.

We obtained the plate which showed an object in the right fourth interspace which seemed too dense for anything but metal. A fluoroscopic examination showed that this had disappeared. Examination the following day showed dullness at the right base extending to the angle of the scapula. Increased vocal fremitus, tubular breathing, whispered pectoriloquy and many fine râles. Two days after the crown had been expelled the temperature never went above normal. After ten days all the lung signs cleared up and expectoration ceased.

The patient remained in the sanatorium a few weeks to regain her strength and went home feeling well and in good condition.

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Symposium on Cancer

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, JULY 16, 1924

Cancer of the Colon

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Cancer of the colon is a disease of great interest to the surgeon, partly by reason of the difficulties it may present, both in diagnosis and treatment, and even more so because of the satisfactory results which follow successful operation in reasonably early cases.

The pathology of this condition has many points of importance in treatment, and none more so than the sites at which it occurs. The pelvic colon is the commonest site by far, next in order of frequency being the cecum, the splenic flexure, the transverse colon and the hepatic flexure. It is at these points in the bowel that the bands developed as a result of chronic intestinal stasis are found, and it is of great interest that the pelvic colon at the situation of Lane's "last kink," so often by far the most markedly obstructive of these evolutionary bands, should also be the commonest site of cancer. It is difficult to escape the conclusion that the obstructions to the passage of the contents of the bowel which develop in Nature's attempts to hold up the heavy, constipated colon represent that irritative factor in the production of cancer which is so clearly recognized in the cancers of the mouth and skin. This relationship between the changes of chronic intestinal stasis and cancer of the colon will be referred to again, but if the correlation between the two conditions is recognized, it offers a suggestion as to prophylaxis which is so important and so little explored a region of the treatment of cancer.

The gross types of cancer occurring in the colon are three, namely the scirrhus, encircling type; the soft, cauliflowerlike, encephaloid type; and the infiltrating colloid type, though the latter occurs far more commonly in the rectum.

Paul long ago pointed out the striking differences in the behavior of these types as regards clinical malignancy, and made the valuable generalization that throughout the body the upgrowing excrescent type of cancer is far less malignant than the downgrowing ulcerating type.

Clogg and others have shown that in the scirrhus growth of the colon malignant cells can be found at considerable distances along the bowel from the site of the stricture, a fact pointing to the necessity of free removal.

Glandular infection in these patients is fortunately late as a rule, and it cannot be too strongly emphasized that enlarged mesenteric glands do not necessarily mean malignant glands, because the septic absorption from the ulcerated bowel surface produces an adenitis far earlier than secondary lymphatic gland infection occurs. Many cases thoroughly amenable to operative measures would be left as inoperable if the mere enlargement of the lymphatic glands of the colon were taken as the measure of operability. Jamieson and Dobson described four groups of glands in connection with the drainage of the colon: 1, the epicolic on the surface of the bowel; 2, the paracolic in the mesocolon close to the bowel; 3, the intermediate along the colic arteries, and 4, the main glands at the origin of the main arteries. In considering the question of operability, enlargement of the first two groups can almost be neglected, and it is the main group that should be most relied on in this respect. These glands are rarely hard and enlarged from sepsis alone, and if such a condition is present it usually means that they are the seat of secondary deposits of growth.

The symptoms produced by cancer of the colon vary according to the stage at which it is seen, depending partly on irritation of the bowel and partly on the degree of obstruction of the lumen which is produced. In themselves the symptoms are, unfortunately, so slight that too often the case presents itself for the first time as one of chronic or acute obstruction. A marked degree of narrowing of the lumen may be produced without symptoms of any kind and sometimes the patient is quite unaware of anything being wrong prior to the onset of acute obstruction. In the early cases the complaints are often slight, there being some discomfort in the abdomen, only occasionally amounting to pain; and the patient feels out of sorts and may begin to lose weight. The action of the bowels is irregular, constipation alternating with diarrhea, and attacks of colicky pain may be felt at times. In some cases the patient may himself have noticed a lump. On ex-

amination a tumor may or may not be palpable. In the pelvic colon the thickened, straight bowel of intestinal stasis is easily mistaken for a tumor especially if diverticulitis is present in addition. Examination of the stools will usually show the presence of blood in small amounts, but this also is often to be found in intestinal stasis quite apart from cancer. X ray examination is of the greatest value, and the presence of a definite filling defect in the colon after an opaque enema, on more than one examination in patients of the cancer age should lead to an exploration of the abdomen. Lane's "last kink" by itself will sometimes produce an x ray obstruction indistinguishable from cancer, and if this is combined with the presence of occult blood in the feces, exploration affords the only means of differential diagnosis. Should such a kink be present, however, its division followed by the careful covering of the raw area with peritoneum, brings such a remarkable relief of symptoms that everything is to be gained by an exploration in such doubtful cases.

When the patient is first seen in a condition of chronic obstruction it is wise, if possible, to attempt to overcome this by conservative means before operation. Several enemata may be necessary before an action results, and in this connection the use of a treacle enema will be found invaluable. Consisting of one part of treacle to three parts of water, and run into the bowel with a tube and funnel, this enema is quite as effective as soap or turpentine, and has the great advantage of acting as a simple nutrient enema should it be retained. Once an action has been secured the bowel can usually be well emptied by paraffin given by the mouth combined with enemata, and operation can be undertaken at leisure. When acute obstruction has supervened, however, immediate operation for its relief is necessary. It cannot be too strongly emphasized that measures directed toward a removal of the growth should never be undertaken in the presence of acute obstruction. The secret of dealing successfully with these extremely sick patients is to do the least possible which will relieve the immediate urgent condition, and to do that in the minimum time. Opinions are divided in these cases between the value of a rapid exploration combined with colostomy in a suitable position on the one hand, and a blind cecostomy with no attempt at exploration on the other. In my opinion both these procedures have their value in suitable cases. In those patients where the distention is pronounced intestinal manipulation is badly borne, and it is here that blind cecostomy, best carried out with local anesthesia, will often tide the patient over a dangerous period when more extensive procedure would have proved fatal. The cecum in some of these patients is enormously distended, and the placing of sutures may prove difficult. Puncture with a trocar and cannula, having first secured the cecum to prevent its slipping, will usually overcome this difficulty and permit the placing of sutures at leisure afterwards.

When distention is not such a marked feature there can be little doubt that a rapid exploration of the abdomen is justified by the valuable information it gives. The situation of the growth can be determined, and an estimate of its operability can be formed, while a colostomy can be so placed at least to interfere with a subsequent operation. Again if the growth is inoperable the question of a possible short circuit can be decided, and if even that is found impracticable the patient is spared the discomfort of a permanent cecostomy with its liquid discharges by placing the colostomy lower down in the length of the bowel. Whichever of these procedures is carried out there should not be too great a hurry to perform the second and radical operation. It is important thoroughly to evacuate the large amount of material which accumulates above these growths, and so to allow the bowel wall to recover its tone before undertaking an operation for removal of the growth. From two to three weeks will be the usual interval required for this purpose.

When the second operation is undertaken, or when a cancer of the colon not complicated with obstruction is operated on, a careful exploration must constitute the first step. The liver should be examined for deposits, and the condition of the main glands at the origin of the colic arteries should be investigated. The local condition is also important, and while extensive adhesion to, and involvement of, the parietes will contraindicate removal, local involvement of other portions of bowel can often be dealt with successfully in this particular type of cancer. By a recognition of the fact that the changes associated with chronic intestinal stasis almost always precede cancer of the colon, its removal will be facilitated. The bands which are formed on the outer side of the bowel and at the flexures are quite separate from the mesentery, and by their division a surprising degree of mobility can usually be obtained in what at first sight appears to be a firmly fixed portion of the colon.

The usual operative procedure adopted in the treatment of cancer of the colon is a local excision of the affected portion of bowel and mesentery, followed by an end to end or lateral anastomosis. This I believe to be an unsatisfactory operation for several reasons. In the first place an adequately extensive excision will necessitate, except perhaps in the pelvic colon, considerable tension to bring the cut ends of the bowel into apposition. Secondly, the feces in these cases are usually inspissated and hard, and the passage of such material over the suture line is liable to produce ulceration and leakage, while the musculature of the proximal colon, being already impaired, is particularly likely to undergo acute dilatation following the operation.

If, however, instead of performing a local excision, the whole colon proximal to the growth is removed with it and an end to end ileocolostomy is used to restore the continuity of the gut, these dangers are largely overcome and in addition several advantages and but few disadvantages accrue. By such an operation in the case of the ascending colon or hepatic flexure very little bowel is removed in excess of what is necessitated by excision of the growth; the removal of the mesentery and its contained glands is facilitated, and the dangers attending the performance of an anastomosis in a portion of intestine without a complete mesentery are avoided. Only fluid feces from the ileum flow over the suture line after operation and the anastomosis can be performed outside the abdomen instead of at the bottom of a deep wound. In the case of growths situated distal to the

transverse colon it is true that the operation appears needlessly severe at first sight, but the actual additional time taken in resecting the proximal colon is small, and if this is done the mesentery and glands can be more fully and more easily removed. The advantages mentioned above apply to the actual anastomosis, and in these cases a large esophageal tube can be easily passed through the junction into the ileum by the rectum and left in place after the operation is completed. This drains away the ileal contents and allows a free escape of gas, thus minimizing the strain on the sutures and rendering the anastomosis almost perfectly safe from leakage. The removal of the colon, which is usually dilated, lessens the intraabdominal tension when the peritoneum is closed and the risks of postoperative ileus are proportionately reduced. The slight technical difficulty of effecting an end to end junction between two portions of bowel of different calibre is readily overcome by spacing the stitches slightly more in the case of the wider end than in that of the narrower one. In a growth of a freely mobile and long pelvic colon, such as is occasionally encountered, the removal of the whole colon is of course unnecessary, as it can be freely excised without subsequent tension, and the anastomosis can be adequately protected by an esophageal tube passed through the junction from the rectum. Finally in those cases which have had a preliminary cecostomy or colostomy performed for obstruction, the removal of the whole proximal colon has the additional advantage that it allows the artificial anus to be removed with the growth and avoids the risks of leakage attending attempts to close such openings.

Metastasis from Symptomless Cancer of Esophagus

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The two cases reported here emphasize the fact that cancer of the esophagus, like other primary lesions around the nose and throat, may be almost symptomless for many months. The extensive metastasis, and not the primary lesion, may cause the patient to seek examination.

CASE I.—(A335370).—A woman, aged fifty-two years, came to the clinic September 25, 1920, because of bilateral enlargement of the cervical glands of two months' duration. In February, 1920, seven months before examination, she had had slight dysphagia for a few days, but this was attributed to an ordinary sore throat. In June, 1920, three months before examinations, she again experienced discomfort in the throat without dysphagia, and tonsillectomy was performed. Two months before coming to the clinic a nodule appeared in the upper right cervical region, and later a gland on the left side of the neck. The glands had enlarged rather rapidly since they were first noted. The patient had lost twelve pounds in weight since the tonsillectomy, and had become rather pale.

The upper cervical glands were enlarged on both sides, more markedly on the right. The condition of the glands appeared to be malignant. Examination of the nose and throat and nasopharynx did not reveal a primary lesion, although there was a suggestion of enlargement of the right arytenoid. The hemoglobin was 67 per cent. Because of the history of slight dysphagia seven months before, the esophagus was examined and an epithelioma on the upper posterior wall was found. X ray treatment was advised.

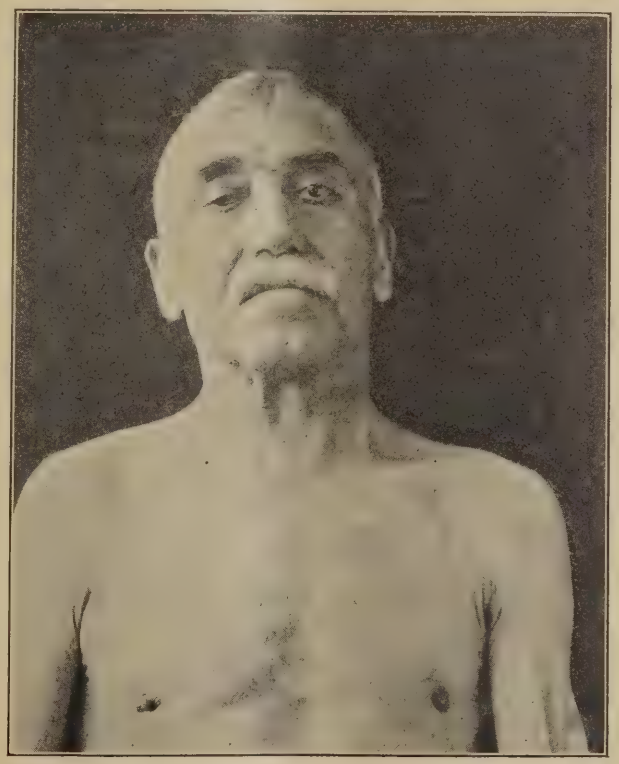

FIG. 1.—A case of carcinoma of the esophagus; note the hard mass in the supraclavicular region, which displaced the trachea and the larynx to the left. A smaller mass just above was also found at examination. (Case II).

The patient consulted Dr. Starr and Dr. Richards of Toronto, and intensive exposures were given over the glands. Marked reduction in the size of the glands occurred following this treatment, and there was a gain of ten pounds in weight. In September, 1921, the patient returned to Dr. Starr for

further treatment. The glands had enlarged considerably and marked dysphagia was noted. Under further x ray exposures, there was slight reduction in the size of the glands with improvement in the general condition, but on December 25, 1921, death occurred suddenly. Necropsy was not obtained.

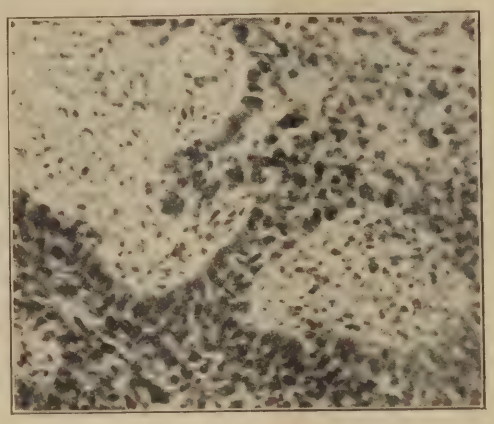

Fig. 2.—Squamous cell epithelioma. (Case II).

Case II.—(A454708).—A man, aged sixty-four years, was examined February 5, 1924. Seven months before, he had begun to have pain in the right supraclavicular region; a nodule appeared at the same time. The nodule gradually increased in size and the pain became more marked. At the end of three months the mass had become so large that x ray and radium treatments were advised, and following these exposures there was a reduction in the size of the tumor, but the pain became worse and was referred down the right arm. Seven weeks before coming to the clinic, hoarseness and dyspnea on exertion had developed, and a week later, obstruction to the swallowing of solid food was noted. The dysphagia had gradually become more marked, until the patient was able to take fluids only.

Examination revealed a hard, fixed mass, five by seven cm., in the supraclavicular region, and a smaller mass just above (Fig. 1). There was also a moderately hard gland in the right axilla, two cm. in diameter. The right vocal cord was fixed in the median line position; there was slight edema of the arytenoids, and the larynx was displaced to the left.

Esophagoscopy under local anesthesia demonstrated a bleeding lesion of the upper esophagus. A section was removed and microscopic examination revealed the presence of a squamous cell epithelioma, grade 3 (Fig. 2).

DISCUSSION

The patient in Case I is of particular interest because of the fact that she did not have dysphagia at the time of examination, and the dysphagia, which she had had seven months before, was very slight and had lasted for only a short time. Her chief complaint was bilateral cervical adenopathy of two months' duration, developing one month after tonsillectomy. The slight enlargement of the right arytenoid, and the previous history of dysphagia made an esophageal examination advisable, as the glands were apparently malignant and as no primary lesion was found in the cavities of the head.

In Case II, the extensive mass in the right supraclavicular region, which displaced the trachea and larynx to the left, and fixed the right cord in the median line was unusual. Dysphagia was present only for five weeks and was attributed to the secondary involvement of the esophagus by the mass in the right supraclavicular region. This case is similar to those in which metastatic masses develop in the neck from a small, symptomless, primary, lesion in the nose or throat. The metastatic mass, however, may be quite extensive, causing all the symptoms for which the patient seeks relief.

The Diagnosis of Spinal Metastases Having a Clinically Latent Primary Focus Within the Chest

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Some time ago (1) we published two cases of spinal carcinoma, one secondary to a primary lesion in the thyroid, the other following a primary focus in the breast, in which owing to the extremely small size of the clinically latent primary tumors the diagnostic side had remained obscure for a long period of time. It was shown at that time that in such clinically obscure spinal lesions one may sometimes arrive comparatively early at a correct diagnosis by fully and properly exhausting all the radiodiagnostic possibilities.

This time we report four more cases of spinal metastases presenting similarly complicated diagnostic conditions. The primary focus in each instance was found to be within the thorax. Here again it failed to give rise to any clinical symptoms for a long period of time. Röntgenologically, however, the primary lesion this time, in contrast to the previous cases, could have been demonstrated early and easily, if anyone had thought of x raying the chest. Yet it was not done, for the reason that, owing to the latency of the primary focus, entire clinical and röntgenological attention, it seems, had been concentrated upon the clinically apparent seat of the disease, namely, a certain part of the spine.

The points which have been touched upon very briefly will be illustrated by the following four cases. It will be shown how important it sometimes may be for the röntgenologist not blindly to x ray only the part of the body asked for by the clinician, but to familiarize himself with the clinical aspect and all the diagnostic possibilities of the individual case and then to lay his radiodiagnostic plans accordingly. Three of the patients came to autopsy at the Montefiore Hospital; in the fourth case, observed at the Lebanon Hospital, no autopsy was obtained, but the

diagnosis was well established by the further course of the disease. As more stress is laid upon the demonstration and explanation of the proper and individual handling of this type of cases than upon a description and reproduction of röntgen anatomical details, it was decided to replace the numerous original x ray plates by plain schematic sketches.

Case I.—L. B., fifty-two years of age, married, a salesman, born in Russia. He had had gonorrhea at twenty-three, previous history otherwise negative. He was admitted into the Montefiore Hospital January 25, 1921, where he died February 3, 1921.

His present illness had a gradual onset eight months prior to admission to our hospital, with pain in right shoulder, lower part of back, and left heel. The pain in the shoulder was dull, that in the back sharp and cutting, and radiating downwards along the posterior surface of the left lower extremity. The pain came on in the form of attacks which varied greatly with regard to frequency and intensity. At the end of three months, during which time the patient had been working at intervals and had been using various liniments, his condition grew worse so that he was no longer able to attend to his business. He then began to make the rounds of the various dispensaries where he was treated for rheumatism, neuralgia, sciatica, and other conditions without any appreciable improvement. Finally being admitted to a hospital, he was given mechanotherapy, whereupon the symptoms became aggravated very rapidly. He left hospital No. 1 in order to enter hospital No. 2, where a tumor of the urinary bladder was diagnosed and operation advised, which the patient refused. He left hospital No. 2 and had an x ray examination done privately. The röntgenologist reported a tumor of the stomach, the spine being negative. The patient then entered hospital No. 3 to be operated upon for the tumor of the stomach. Operation revealed a normal stomach and also failed to furnish any new clue for the solving of the diagnostic problem. On January 25, 1921, eight months after the onset of the symptoms, the patient was transferred to the Montefiore Home in a moribund condition.

A satisfactory and complete physical examination was impossible owing to the patient's condition. There seemed to be dullness over the right apex, numerous various râles over both lungs, marked tenderness over the lumbosacral spine, and a suggestion of loss of active motility of left lower extremity; urine and Wassermann reaction negative, temperature normal.

Röntgen ray examination was made on February 1st, which showed complete obliteration of right upper lobe region; marked enlargement of root glands; advanced irregular destruction within the bodies of the fourth and fifth lumbar vertebræ and within upper portion of the sacrum; small irregular areas of bone absorption scattered throughout the cranial bones. Röntgen ray diagnosis: Multiple metastases in lower portion of spine and in skull, evidently secondary to tumor of the right lung (Fig. 1).

Patient died two days later. Autopsy findings: Carcinoma of right upper lobe with metastatic involvement in fourth and fifth lumbar vertebræ and in the upper part of the sacrum, especially along the sacroiliac joints. Gastrointestinal tract was normal.

Case II.—S. K., fifty-five years old, married, a tailor, who had been in good health until sixteen months prior to admission into the Montefiore Home on April 29, 1919. His family history was negative.

His present illness dated back to December 25, 1917, when the patient fell on the ice and injured his shoulder. Following this a general weakness gradually developed which increased to such a degree that the patient was unable to walk, and had to stay in bed for a period of eight weeks. He then gradually recovered sufficiently to be able to attend to his work. A certain amount of weakness, however, remained and he sometimes had to force himself to finish his daily amount of work. Thirteen months after the accident the patient noticed a small hard nodule in the right axilla, and at the same time his general weakness began to increase. A private physician considered the condition to be due to bad teeth and advised their removal. Soon after the removal of the teeth and quite suddenly, pain started in various parts of the body and increased rapidly to such a degree that the patient soon became bedridden. The tumor in the right axilla increased in size and new growths appeared also in the left. On April 29, 1919, sixteen months after the onset of the symptoms, the patient was admitted to the Montefiore Home.

Physical examination revealed complete paralysis corresponding to the fourth and fifth dorsal segments; large tumors in both axillæ; numerous moist râles in left supraclavicular region. The clinical diagnosis was transverse myelitis, probably due to a metastasis, as suggested by the axillary glands; the primary focus was not definitely known. Laboratory findings were negative.

Röntgen ray findings on May 13, 1919, showed the spine negative, oval shaped, well circumscribed shadow of slight density, about seven cm. at its widest diameter, occupying the region of the left root; small, slightly irregular areas of bone destruction within the occiput. Röntgen ray diagnosis was mediastinal tumor with occipital metastases. Radiographic reexamination of the thoracic spine on May 23d, front view, negative; lateral view showed fine irregular destruction along the anterior aspect of the bodies of the fourth, fifth and sixth thoracic vertebræ, a finding which was interpreted as metastatic involvement (Fig. 2).

The patient died on June 6th. Autopsy findings were as follows: Mediastinal lymphosarcoma, the latter pressing tightly against the anterior surface of the midthoracic vertebræ; slight irregular destruction along the anterior aspect of the bodies of the fourth to seventh thoracic vertebræ; metastasis within the spinal cord on level of second thoracic vertebra; perforation of a sarcomatous retroperitoneal gland through the ligamentum longitudinale anterius, extension of the tumor tissue underneath the ligament upward as far as the lower border of the mediastinal tumor, and beginning invasion by the tumor masses of the bodies of the seventh to fourth thoracic vertebræ (Fig. 3); diffuse metastases in practically every organ.

Case III.—B. F., fifty-six years of age, married, was admitted to the Montefiore Home on July 6, 1915; died July 25, 1915. Her family and previous

Fig. 1.

Fig. 2.

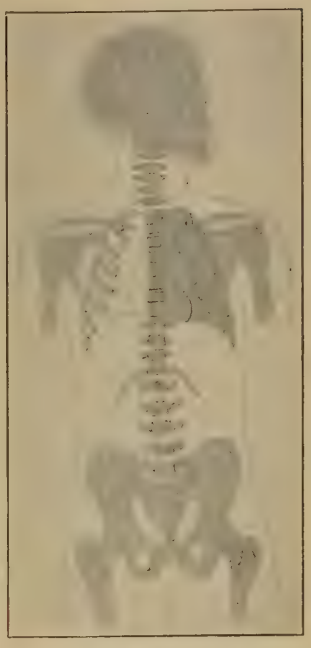

Fig. 4.

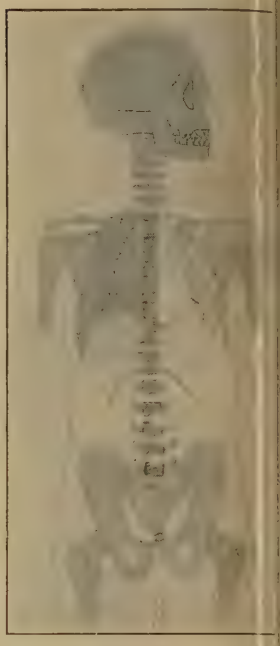

Fig. 6.

Fig. 1.—Schematic demonstration of findings in Case I, showing primary tumor involving the right upper lobe, and metastases in sacrum, lower two lumbar vertebræ, and skull.

Fig. 2.—Schematic demonstration of findings in Case II, showing at (*a*) the primary mediastinal tumor, at (*b*) the level of the compression of the spinal cord by a metastatic focus; within the occipital region several metastases.

Fig. 4.—Graphic illustration of the findings in Case III, showing the primary tumor involving the entire left lung field; metastases within the upper three lumbar vertebræ; some of the ribs and the skull. Within the right lung field there are several small shadows which were found at autopsy to be due to metastases in the pleura.

Fig. 6.—Schematic demonstration of findings in Case IV. Note primary tumor (endothelioma) of right lung and metastases in lumbar vertebræ and upper portion of left femur.

history was negative. Her present illness began eighteen months prior to admission to our hospital when the patient, while walking in the street, suddenly broke down without any apparent cause, was unable to rise and had to be carried home. There was tenderness over the lumbosacral region. A private physician diagnosed the case as fracture of the spine, which diagnosis apparently was confirmed by a röntgen ray examination. As the instituted treatment failed to bring any relief, a second x ray examination was made and an x ray diagnosis of tuberculosis of the spine was furnished. The patient was placed in a plaster cast for five months, without any favorable result, however. On the contrary, the pain in the back gradually became unbearable, and the plaster cast was removed. The patient was unable to stand; at each attempt she "fell down as if paralyzed."

On admission to the Montefiore Home the patient appeared very poorly nourished, was unable to stand up and evidently was suffering great pain. Tenderness was most pronounced over the upper lumbar vertebræ. Every movement of the body was made *en masse,* and caused excruciating pain. A complete neurological examination was therefore not attempted. There seemed to be motor paralysis of both lower extremities. Examination of the chest revealed a suggestion of fluid on the left side. Urine and Wassermann reaction were negative. Clinical diagnosis was metastasis to the spine, probably secondary to a primary focus within the left side of the chest.

Röntgenological examination showed complete obliteration of left lung field, appearance of shadow suggestive of neoplasm; numerous small metastases within the right lung; advanced destruction of upper lumbar vertebræ; several small areas of bone rarefaction within the cranial bones and in some of the ribs. Diagnosis: neoplasm of the left lung with multiple metastases in lumbar spine, ribs, skull and right lung (Fig. 4).

The patient died several days later. Autopsy findings: Primary adenocarcinoma of left lung; numerous small metastases within the pleura on the right side (on the intra vitam plates diagnosed as lung metastases); large amount of fluid in left thoracic cavity; large metastases in the upper lumbar vertebræ; marked flattening and lateral deflection of the spinal cord by a tumor mass on level of second and third lumbar vertebræ (Fig. 5); numerous metastases in ribs; skull not opened.

Case IV.—A. G., fifty-four years old, married, superintendent of a cigar factory, was admitted to the Lebanon Hospital on November 20, 1916, and died on January 23, 1917. Family history and previous history were negative except that the patient had an attack of lumbago five years ago.

The patient's present illness began about one year prior to his admission to our hospital, when he began to notice a slightly increasing general weakness. He found that his former strong will power and initiative were diminishing and that sometimes he even had to force himself to finish his daily routine work. There was no change in appetite, no loss of weight, and no pain.

One morning he was sitting at his desk in the factory, going over the mail, his feet stretched upon the desk. While taking his left leg off the desk he sud-

denly experienced such extreme pain in the lower back that he fainted. He was found by other employees lying on the floor. After a few days of rest in bed he recovered sufficiently as to be able to take up his daily work. A slight dull pain, however, remained in the region of the lower back and this pain sometimes increased in severity especially on hasty movements, rotation and bending of the body. Gradually he became so perceptive of these various pain producing factors, that, in contrast to his former resolute and brusque walking, he adopted a careful and cautious manner of moving about. He suffered great distress from the elevated trains which passed close to the factory, each passing train causing a slight trembling of the building which elicited in him a feeling as if somebody cut with a sharp knife along his lumbar spine. He dreaded the approach of each train and spontaneously tried to eliminate the trembling of the floor by holding to some fixed objects.

The patient was treated by various physicians without any appreciable result. The further course of the disease was characterized by marked remissions. After shorter and longer free intervals the old symptoms reappeared with increased severity. Later the pain in the lower back radiated downwards along the posterior aspect of the left lower extremity. Still later pain in the left hip and a slight cough appeared. Repeated x ray examinations of the lower portions of the spine were negative. The last radiographic observation of the lumbosacral region and the left hip was made three weeks prior to the patient's admission to our hospital and was also reported negative.

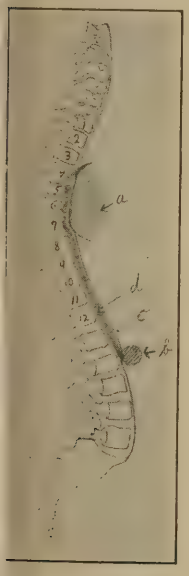

Fig. 3. — Graphic illustration of some of the autopsy findings described in Case II; (*a*) primary mediastinal tumor; (*b*) metastatic retroperitoneal gland breaking through ligamentum longitudinale anterius; (*c*) ligamentum longitudinale anterius; (*d*) metastatic tumor masses growing underneath the ligamentum longitudinale anterius. On the level of the lower border of the seventh thoracic vertebra the tumor masses are seen invading the anterior portions of the seventh, sixth, fifth and fourth vertebral bodies.

Various clinical diagnoses were made, such as lumbago, sciatica, coxitis, and neuralgia. To none of the various corresponding treatments did the patient react favorably as mentioned above; on the contrary, the condition grew steadily worse until the patient finally became bedridden and thus was admitted to the Lebanon Hospital on November 20, 1916.

Clinical examinations by Dr. Henry Roth and the late Dr. William Leszynsky revealed pronounced tenderness over the lumbar spine and in the region of the left hip, restriction of motion of left hip evidently being due to pain, and suggestion of fluid in right thoracic cavity. The patient apparently had lost much weight, but still was fairly well nourished. Neurological examination was practically negative. Clinical tentative diagnosis: possibility of spinal metastasis secondary to an intrathoracic neoplasm.

Röntgenological examination on November 22, 1916, showed a few small destructive areas within the contiguous portions of the second and third, to a lesser degree also of the fourth and fifth, lumbar vertebræ; fine bone destructive foci within the head and neck of the left femur; complete obliteration of the right lung field; slight displacement of the mediastinal organs to left. Röntgen ray diagnosis: metastatic involvement of lumbar vertebræ and of upper part of left femur; primary focus within right side of chest (endothelioma?) (Fig. 6).

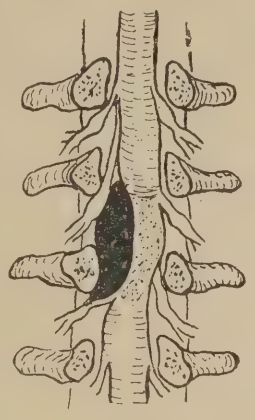

Fig. 5.—Graphic illustration of the compression of the spinal cord by a metastatic tumor mass on level of upper lumbar region in Case III.

Aspiration of thorax two days later gave 160 c. c. of serosanguineous fluid. The patient declined rapidly. Cough and dyspnea gradually dominated the clinical picture. Aspiration had to be repeated every two or three days, each time about one thousand c. c. being removed. The patient died on January 23, 1917, under rapid loss of weight and strength, extreme pain in back and left hip and suffocating cough. Autopsy was not obtained.

The findings in the four cases just outlined again show us the uncertainty and complexity in the diagnosis of spinal metastases. The development of the symptoms is treacherously slow, the course of the disease quite frequently characterized by remissions to such an extent that even the most experienced clinician may sometimes become doubtful as to the correctness of the diagnosis even in cases where the primary focus is known or where it has been previously removed by operation. One may readily see, therefore, how much more difficult the diagnostic conditions may become in cases where the primary focus is not known or where the possibility of malignancy not even is suspected. It is therefore not surprising that these patients pass very soon from the hands of the general practitioner into those of the specialist, usually the neurologist or orthopedist, who, very often with the help of the röntgenologist, tries to solve the diagnostic problem. It is to these specialists that our four patients teach a lesson, the importance of which has been pointed out in a previous article, namely, the importance of general clinical medicine for the specialist. A few more remarks upon this point shall not be construed as a reflection upon the ability of others, but as a desire to aid in the solution of the diagnostic problems in spinal carcinoma.

The related clinicoröntgenological points for consideration may be expressed thus: the clinician referring a patient with a spinal lesion to the röntgenologist should not request the latter to radiograph one certain part of the spine unless he is absolutely certain as regards the diagnosis. Wherever there is any doubt as to some of the diagnostic features, the clinician should explain to the röntgenologist the diagnostic problems to be solved and should leave it to the x ray specialist to work up the case röntgenologically along the lines given. The röntgenologist, on the other hand, should have had sufficient experience in

röntgenology, in general clinical medicine, in gross pathology, and comparative postmortem x ray work, to be able fully to understand the clinical outlines furnished by the clinician, to transform them into röntgenological ideas, to picture in his mind in advance all the gross pathological changes possibly expected, and their radiographic demonstrability, and to lay his röntgenological plans for the examination so that a complete utilization of the röntgen ray method will be assured. If for some reason information by the referring clinician with regard to the clinical features of the case is not available, the röntgenologist ought to be able to obtain the necessary data by taking a brief but exhaustive history. Such cooperation between clinician and röntgenologist will prove beneficial. On one hand, it will avoid making the röntgenologist appear as a plain technician in the eyes of the patient, on the other hand it will protect the clinician against many grave diagnostic omissions and errors. It will make practically impossible occurrences such as those in the cases reported above, where radiographically easily demonstrable, but clinically latent primary foci within the thorax were missed, because nobody thought of x raying the chest.

It has been pointed out lately that specialization is being carried too far nowadays, that there are too many specialists and too few general practitioners. One might be inclined to modify this statement to the effect that there is nowadays a tendency among the specialists, röntgenologist as well as others, to underestimate the importance and value of general clinical medicine. And among the specialists there is none who is as ready to throw overboard general medicine as the röntgenologist. The latter is only too apt to forget that for a solid foundation of a röntgen ray diagnosis one very often has to gather diagnostic building stones from various distant parts of the body, parts that sometimes are situated far away from the clinically apparent location of the lesion. The radiogram of the apparently involved portion of the spine may present, for instance, a bone destructive process, but such a finding, especially in cases where the primary focus is not known, does not necessarily clinch the diagnosis of metastasis. However, if further radiological investigation reveals additional destructive areas in the skull, the diagnosis takes on more definite shape. And if still further investigation produces additional bone destructive foci in the head, or neck or upper portion of the shaft of the femur, or in the ribs, or in other portions of the spine clinically not involved, then the diagnosis of metastases is settled no matter whether the primary focus is known or not, whether malignancy is suspected clinically or not.

Of special interest are the röntgen anatomical findings in the second case. Here were the primary focus, in form of a small mediastinal tumor, and the clinically involved area of the spine situated close together. The involved portion of the spine had been x rayed prior to the patient's admission to our hospital, the primary focus, therefore, also was on the spine plate, but could not be noticed as its contours had been obliterated by the strong penetration and exposure necessary for spinal radiograms.

Attention may also be called to the interesting pathological anatomical process leading to the formation of the metastatic involvement of the midthoracic vertebræ in the same case. A sarcomatous metastasis in one of the retroperitoneal glands on the level of the upper lumbar vertebræ broke through the ligamentum longitudinale anterius of the spine. The sarcomatous tissue then grew underneath the ligament, extending upwards, evidently following the path of least resistance, and undermining the said ligament, but not involving any of the vertebræ. After the tumor tissue had reached the level of the lower border of the mediastinal tumor which tightly encircled the anterior and later surfaces of the midthoracic vertebral bodies, its further growth upward apparently was checked by the tumor mass and deflected into the vertebral bodies which, owing to pressure atrophy caused by the mediastinal neoplasm, probably formed a *locus minoris resistentiæ*. The sarcomatous process in the thoracic vertebræ of this case, as found at the autopsy, therefore cannot be considered a true metastasis.

Finally it might be worth while mentioning that mechanotherapy should be used with great caution in cases of spinal lesion in which the diagnosis is not absolutely and definitely established as nonmalignant. In fact, it would be advisable not to use it at all in such doubtful cases, because there is hardly any doubt that mechanotherapy is very harmful in cases of spinal carcinoma. Comparative röntgenological studies carried on for a long period of time in cases of spinal involvement at the Montefiore Home showed that in several instances of spinal metastases there started a few days after beginning mechanotherapy an unusually rapid growth of the bony metastases.

Similarly unfavorable or even still more harmful effect may follow in spinal metastases, and for that matter in any type of neoplastic metastases, a removal of teeth, as shown by our second case in which extraction of teeth was followed by general sarcomatosis.

There were observed recently by the author two other instances in which one to two years after a successful operation for carcinoma of the breast extraction of several teeth was followed by a sudden outbreak of general carcinomatosis. It might therefore be advisable to pay, in future, attention to such an occurrence and to collect and publish further observations on this point.

CONCLUSIONS

Clinically latent intrathoracic neoplasms may give rise to metastases with severe clinical manifestations.

An early recognition of such latent primary foci may be facilitated by repeated, careful, complete clinical and rontgenological examinations.

The röntgen ray examinations in obscure cases should be carried on individually along lines suggested by the clinical features of the case.

The usual routine radiograms of the clinically involved part of the spine alone very often are of little diagnostic value.

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An Unusual Massive Tumor of the Abdomen

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An extensive and unusual massive growth in the abdomen warrants a report of the following interesting case.

Case.—J. W. M., male, aged sixty-three, was admitted to the Hebrew Hospital, June 29, 1922, with the complaint of severe aching in the abdomen while in the standing posture or when ascending stairs. His family history was unimportant. His father died at the age of forty-two, his mother at the age of sixty-two of unknown causes. Two sisters were living and well. There was no family history of cancer, tuberculosis or kidney disease.

The patient's previous health had always been good. He had had the usual diseases of childhood and a severe attack of bilious dysentery at eighteen. He had had night sweats, rheumatism, weakness and malaise and severe pains in his joints eighteen or nineteen years ago. Scarlet fever was present in childhood. He had not had diphtheria, typhoid fever, pneumonia or pleurisy. There was a gonorrheal infection thirty-five years ago, which cleared up thoroughly under treatment. The patient denied having had syphilis. Twenty-eight years ago, he had a fistulo in ano, which was relieved by means of an operation. His habits had been exemplary. Coffee and tobacco had been used to a moderate extent.

The patient had an acute attack of pain in the epigastrium and left hypochondrium last summer, which was relieved by means of hot applications to the abdomen. For the past two months he had had similar pain, less severe, however, but more chronic in character. The pain was at the time of examination dull and aching and increased on standing or on ascending stairs and was in no way influenced by food. The patient had obtained moderate relief by the use of an abdominal support. The bowels moved normally daily, though occasionally there was a tendency to diarrhea. There had been no evidence of jaundice. The appetite was good. There was neither nausea nor discomfort following meals. The patient had slight dyspnea on exertion. There had been neither palpitation nor pleural pain. Edema of the ankles has been observed at the end of the day, especially in warm weather. A loss of ten pounds in weight had been noted during the past three months. His normal weight was 240 pounds; present weight 200 pounds; pulse rate 95; temperature 99°; respiration 22; blood pressure, systolic 130, diastolic 70.

The patient was a well developed, fairly nourished, large framed individual, presenting some signs of recent loss of weight. Numerous moles and nevi were noted over the entire trunk. His head, eyes, ears, mouth, throat and chest organs were negative with the exception of a faint blowing systolic murmur at the apex of the heart.

On inspection the abdomen was found to be markedly distended with the greatest prominence between the umbilicus and ensiform cartilage. There was a definite fullness in both flanks with indications of a movable dullness. On palpation a large mass was revealed about the size of an infant's head. This mass was irregular in outline and extended from the right costal margin in the gallbladder region down and to the left. The mass reached sixteen cm. above the umbilicus, ten cm. to the right, and eight cm. to the left. It extended a few centimetres below the umbilicus. It was hard, firm and smooth, and not tender on pressure. The percussion note over the mass was relatively dull. There was evidence of fluid in the flanks. The mass protruded in the fashion of a ventral hernia when the patient was in the upright pocture.

The liver, spleen and kidneys were not palpable. The axillary, inguinal and epitrochlear glands were enlarged and palpable.

The urine was normal. Wassermann test was negative, blood urea nitrogen 58.24 mgm. per cent., blood urea 124.63, hemoglobin 90, color index 1.1, erythrocytes 4,464,000, leucocytes 5600. Differential count, small lymphocytes 23.5 per cent., large mononuclears 1.0, transitionals 1.0, polymorphonuclears 74.0, basophiles 0.5, platelets normal.

The stool was well formed, dark brown in color and contained no visible or occult blood, and no undigested food particles, mucus or parasites.

The x ray examination of the gastrointestinal tract pointed to a mass encroaching upon the stomach wall together with upper right quadrant adhesions. Based on the loss of flesh, the age of the patient, and the palpable extensive growth, the diagnosis of a malignant growth of the abdomen was made.

On account of the doubt as to the nature of the growth, an exploratory operation was advised; this was undertaken the following day. A right rectus incision was made and the abdomen opened in the usual manner. A large quantity of chylous fluid escaped from the abdominal cavity. The tumor mass filled the entire upper abdomen. It was large, rounded, nodular and vascular, apparently extending up from the left kidney region. It was definitely retroperitoneal and too extensive for removal. A small incision was made anteriorly in the peritoneal covering over the growth and a small section removed for microscopic examination. The peritoneum at the point of incision was drawn together with silk stitches and the abdomen closed in the usual manner. The diagnosis arrived at was inoperable retroperitoneal sarcoma.

The patient stood the operation well, passed a fairly comfortable night, but early the following morning his condition became alarmingly bad; his temperature at 8 a. m. was 102°; pulse 140; respirations 44. He was extremely restless. From this time on he became progressively worse, though nothing abnormal could be detected in his chest. He died the same evening at 7 p. m. Just before death, he vomited a large amount of coffeeground matter.

PATHOLOGICAL REPORT OF SPECIMEN

Material consisted of small bits of tumor from retroperitoneal inoperable tumor. In gross appearance it was very cellular and friable.

Section showed a cellular tumor composed entirely of cells of the small round cell type. Here

Fig. 1.—Anterior lateral view of the growth.

and there was noted a giant cell which in some respects is similar to giant cells of the Dorothy Reed type. Occasionally large areas of fibrosis were observed. No eosinophilia was present, and there was no evidence of tuberculosis. A definite diagnosis in this case rested between lymphosarcoma and Hodgkin's disease. In favor of Hodgkin's was the presence of the giant cells above mentioned as well as the fibrosis. In favor of lymphosarcoma was the uniform small round cells, definitely a little larger than the small lymphocyte, the appearance in the architecture of the tumor, the absence of eosinophilia together with the history of the case, as well as the fact that abdominal Hodgkin's disease is rare. A diagnosis of retroperitoneal lymphosarcoma, small, round cell type was made.

GROSS FINDINGS AT PARTIAL AUTOPSY

The body was that of a well nourished man of sixty-three years. The abdomen was prominent and showed a long right rectus incision partly healed. There were no gross external abnormalities. There was considerable subcutaneous and visceral fat, normal in color and distribution. The pericardial sac was normal in size, position and appearance, and contained a small amount of normal straw colored fluid. The surfaces of the sac and heart were smooth and glistening and of good color. The heart was small, muscle tone and development seemed good. No dilatation or hypertrophy. Measurements 12x12x5.0 cm. Weight 430 gms. The ventricular walls were normal in appearance and thickness, measuring left ventricle 1.4 cm., right .5 cm. The atria were clean and smooth. The coronaries showed scattered patches of sclerosis but were patent throughout their entire lengths. All the valves of the heart appeared to be competent. No thickening of the edges was present. Measurements: mitral 8.7 cm., aortic, 8.3 cm., tricuspid, 12.5 cm. The aorta showed a few sclerotic patches, but the walls were quite elastic.

The pleural sacs contained no fluid. The surfaces were smooth and glistening everywhere except a small area of the right base behind where there were a few fibrinous adhesions to the lung base. The lungs were air containing throughout but showed scattered areas of slight congestion in all lobes. There was no consolidation grossly. The right lung weighed 315 gms. and measured 23x15x4 cm. The left weighed 230 gms. and measured 23x14x6½ cm.

When the abdomen was opened there was visible, protruding from among the loops of intestine an irregular mass made up of nodules about the size of tennis and golf balls, firm and rubbery in consistency. The site of the removal of a small portion of one of the nodules at operation was plainly visible. The mass was found to arise retroperitoneally and posteriorly and was adherent to the spine. It extended from the level of the forking of the aorta up to a level midway between umbilicus and xyphoid. The most prominent nodule was just above the umbilicus. Several of the nodules were attached to the main mass only by their connective tissue and fat. Enmeshed in the mass were loops of gut which could not be extricated without destroying the mass. Just beyond its emergence the intestine was discolored and hemorrhagic in appearance externally. This extended about two feet along the jejunum and beyond this was normal in appearance. The inner surface was normal throughout the entire length. The pancreas was also adherent to the mass, but not included therein. It was not enlarged and had a normal appearance.

The liver was smooth and normal in appearance both on the surface and in section, weight 2,190 gms., measurements 27x19x8½ cm. The gallbladder was distended, no stones noted, all ducts patent.

The spleen measured 14x8x3.5 cm., weighed 225

Fig. 2.—Posterior view of the growth.

gms. The capsule was studded with pinpoint white nodules and a large one measuring on section .75 cm., was cream colored and seemed made up of tissue in layers. It was firm, rubbery, and encapsulated. Splenic substance was normal in appearance.

The stomach was partially filled with a dark brown fluid. The walls internally and externally were normal in appearance and texture. The pylorus showed no abnormalities.

The kidneys were normal in size and appearance. The right measured 11x3x6.1x3.4 cm. and weighed 175 gms. while the left measured 10.5x6.75x3.25 cm. and weighed the same. The cortex in both measured 1.2x2.2 cm. The pelvis of the left kidney was slightly enlarged. Grossly no abnormalities could be made out. Both capsules striped easily. The adrenals together weighed 25 gms., the right being somewhat larger than the left. The ureters were normal in size. The bladder was thinwalled and normal in color. The prostate measured 4.7x3.3x2.3 cm. No nodules were present. The left testicle with appendages weighed 60 gms. and measured 4.7x3.5x2.3 cm. while the right weighed 70 gms. and measured 6.5x4.6x2.6 cm. The sac was distended with fluid.

MICROSCOPIC FINDINGS

The heart muscle was apparently normal, vessels normal. The left upper lung was somewhat fibrous, moderate pneumokoniosis; shadows of red blood cell in the alveoli, in the remainder there was some breaking through of the alveolar walls to form large air spaces (emphysema moderate). There were some pigmented cells in the alveolar walls. Right lung showed same picture. The liver was normal except for some slight fatty degeneration. There was some increase in the splenic tissue, apparently due to edema, no increase in the reticulum, there was a moderate deposition of pigment. A section taken through the large nodule described in the gross examination shows that it was made up of small round cells arranged in layers which were concentrically circular at the outer margins. The cells were of the small round variety similar to those of the original growth. The nodule caused a compression of the surrounding splenic tissue so that the trabeculæ and corpuscles were arranged circularly about the nodule (i. e., new growth). This gave the appearance of whirls about the nodules in the gross specimen.

Sections of intestines were not made. Left kidney showed normal kidney tissue. Right kidney showed a similar picture with the exception of some degenerative change in the tubules which are filled with red blood cells. There was moderate increase in the fibrous stroma of the prostate. The glands were surrounded by a moderate round cell infiltration. They were dilated and filled with secretion. Sections of adrenals and testicles showed normal tissue. The seminiferous tubules contained normal cellular elements including spermatozoa in various stages of development. The intertubular tissue was normal. The cord was normal and filled with opaque staining material. The section of the tumor had, in general, the appearance of splenic tissue. It was made up mainly of small round cells with here and there occasional spindle shaped cells. The growth was most likely a small round celled sarcoma. The microscopic diagnosis was: 1. Retroperitoneal small round celled sarcoma. 2. Metastasis to the spleen. The photographs illustrate the unusual use by any practitioner.

Ligature Treatment of New Growths

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Several years ago I conceived the idea that if the blood stream was cut off from developing benign or malignant growths, the abnormal tumor mass would atrophy and disappear. With this idea in mind I treated several cases of benign growths, including certain verrucæ, by tightly embedding their bases in a ligature of fine silkworm gut, or other suitable material. In some instances, as verrucæ, the ligature was placed at the very root—or base—of the growth, tied as tightly as possible, and allowed to remain until it fell off. In benign tumor masses it is best to use a subcutaneous ligature—an ordinary curved needle being used to place the ligature at the root of the growth, and the ligature is drawn as tightly as possible, to produce a complete shutting off or occlusion of the blood supply. Subcutaneous malignant growths, prior to metastasis, are treated in the same manner. It is necessary that the ligature include the entire base, or, still better, include the healthy tissue below the base of the growth. Malignant growths to which this method is applicable, show the same successful results as benign masses.

The ligature is kept on indefinitely until the growth shows satisfactory atrophic changes. The earlier the method is applied, the more satisfactory the results.

Following the application of the ligature there is a gradual disappearance of the growth, the masses becoming progressively smaller until they disappear. It is often necessary to apply the ligature several times before a complete result is achieved. It is necessary to include all the pathological tissue in the ligature.

Microscopical examination of the tissue sections of the growths treated by the ligature method shows a progressive pressure atrophy. The cells become smaller and smaller and finally disappear. In many of these cases a fat necrosis or degeneration of the cells occur. There is frequently an accumulation of droplets of fat in the cells, which can be stained by Sudan III or osmic acid. The cells frequently disintegrate giving an oily appearance to the mass. In most cases the cells simply become smaller, the cytoplasm appears perfectly clear, the nuclei are small, and the result is a mass of degenerating cells and cell detritus. Occasionally a process analogous to a dry gangrene develops.

The ligature method is undoubtedly a valuable method of treatment for certain benign and malignant growths. Its simplicity makes it available for extent of the growth.

Cancer of the Hepatic Flexure of the Colon

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As an introduction to the subject of cancer of the hepatic flexure of the colon I would briefly refer to a specimen successfully excised, followed by ileosigmoid anastomosis and recovery of patient (Fig. 1).

The neoplasm is seated at the superoexternal aspect of the hepatic flexure of the colon. It is the size of a tangerine orange and practically annular in shape. It does not completely involve the internal aspect of the intestinal wall. The lumen of the intestine is reduced to such a degree that the little finger can hardly pass through. The plicae circulares (valvulæ conniventes) have disappeared and the internal surface of the growth is dotted over with small, nonulcerated neoplastic buds.

On section a vestige of the external muscular band can be seen. The cecum is short and dilated; the commencement of the transverse colon somewhat atrophied.

Microscopically the diagnosis was: typical cylindrical epithelioma of the intestinal type.

SURGICAL ANATOMY

In a necessarily limited description of the surgical anatomy of the hepatic flexure of the colon, it is not my intention to refer to all those writers who have studied the topography and connections of this viscus. Only the essential anatomical peculiarities from the surgical viewpoint need be mentioned.

The first question is in what region should the surgeon approach the right flexure of the colon? When one consults the literature of the subject, it at once becomes apparent that there are no fixed landmarks for reaching this segment of the large intestine. This is comprehensible in the case of an organ as variable in position as the transverse colon.

However, it is useful to outline its situation if only for the purpose of deciding between a median or lateral laparotomy as a route of approach. Hence, with I. L. Faure, I will merely say that the right angle of the colon is to be found at the level of the tenth or eleventh rib and we outline the seat by saying that it corresponds to a portion of the abdominocostal wall as follows: two vertical lines map out its lateral limits, one starting at the apex of the axilla is drawn down to the anterosuperior iliac spine, the other parallel to it, but more anterior, passing through the nipple, a parallel line passing through the apex of the eleventh rib gives the lower limit. Hence we have a quadrilateral within which lies the hepatic flexure of the colon, whose internal border is epigastric, the superoexternal hepatic and the lower border prerenal and duodenal.

When an incision of the abdominal parietes is made in the region just outlined, after having raised up the lower edge of the liver, it will be seen that the junction of the ascending colon with the transversed colon is formed in the following way: the ascending colon is nearly vertical; on the contrary, the branch formed by the commencement of the transverse colon is oblique upwards, sometimes horizontal, very rarely oblique downwards. But while the prerenal ascending branch is situated in the same plane throughout its entire course, the transverse is not only directed obliquely to the left, but from behind forwards as well. As J. L. Faure has pointed out, this arrangement is due to the deep situation of the kidney in the adult, on account of increase in depth of the posterior abdominal wall.

The hepatic flexure is consequently deeply seated especially when the liver is large or projects slightly forward and the kidney small in size. It will be found on the right side of the gallbladder to which it is sometimes contiguous, while at other times it may be distant to it for as much as several centimetres. It is in relation to what Jonnesco designates by the name of the internal surface of the right lobe of the liver and it makes an imprint in it in the form of a little hollow situated more or less anteriorly according to the size of the liver, as well as the direction of the transverse colon which frequently recedes from the under surface of the liver. In extreme cases, such as those described by Curschmann, Vianny, and myself, the right angle of the transverse will be found in relation to the convex surface of the liver, but such instances are exceptional.

Behind, the flexure lies in the kidney. Exceptionally it runs along the external edge of the kidney but usually it rests on its lower pole over the antero-external aspect, allowing one to perceive the intero-internal aspect of the kidney where it separates from this organ. In this normal arrangement the pelvis and hilum are to the inner side and above it. However, occasionally the flexure reaches as high as the middle of the kidney. In this case it is rather open and its upper branch along with the transverse colon cuts across the second portion of the duodenum at its upper part. This constitutes the high or duodenal position of the right angle of the colon.

The relationship to the duodenum appears to me to be more important than most writers seem to think. In point of fact, when the surgeon deals with the hepatic flexure, he is often impressed by the contiguity of the small intestine on the one hand, and on the other, that of the terminal portion of the ascending colon when the mesocolon does not exist or is little developed.

In reality, the internal border of the ascending colon at this level lies on the duodenum and when one is not aware of this fact some difficulty may arise in mobilizing the two intestines and especially the application of the clamps which control the hemostasis of this portion of the hepatic flexure.

To this relationship to the second portion of the duodenum when the hepatic flexure is situated high up, an equally important relationship becomes added, namely, that of the hepatic pedicle and bile ducts. Gallbladder, hepatic pedicle, second portion of the duodenum, with the head of the pancreas, such are the visceral relationships which the operator must have in mind when he operates on the hepatic flexure of the colon.

Finally, not only in the pathological cases but normal subjects should be mentioned the very low sitions of the hepatic flexure which may drop down to the right iliac fossa. In reality, the hepatic xure is in the normal state, less strongly fixed an the splenic flexure. Jonnesco, Fromont, Buy d others have described a series of fibrous or peri-neal ligaments at the hepatic flexure, some being nstant, others less so, and some so exceptional at one is led to suspect that these ligaments are erely pathological products. These ligaments as-re the fixity of the hepatic flexure to a certain gree. The more important are the right colic liga-ent, the hepatocolic and cysticocolic ligaments.

The right colic ligament, also called phrenicocolic Prevet, having a triangular shape, is inserted a w centimetres from the costal margin on the lateral all of the abdomen and spreads on to the right lon. Its insertion on the wall is sometimes at a int so far forward that causes the right portion the colon to make a rve with the concavity rwards and to the left. is a semifibrous lamel-ligament, which occa-nally becomes fused th the renocolic and patocolic ligaments, us taking part in fixing e limits of the pericys-fossa.

The hepatocolic liga-ent which, according to ly exists in about one bject out of four, rms a fanshaped pro-ss whose apex is in-ted on the internal as-ct of the vertical lobe the liver at a certain stance from the gall-adder, while its broad se expands over the na cava, the descend-g portion of the duode-m, right angle of colon d anterior surface of kidney. Its shape varies. The cysticocolic ligament is merely a prolongation the lesser omentum which is inserted on the gall-adder and forms a peritoneal bridge between it, the odenum and right portion of the colon at about ght to ten centimetres from the hepatic flexure.

Finally, Buy has described, under the name of ation lamina of the hepatic flexure, a fibrous layer ree to ten centimetres broad, quite pliable, extend-g between the two branches of the hepatic flexure. Such are, briefly described, the ligaments which do t appear to me to play a part sufficient for assuring e fixity of the right angle of the colon. They are t ligaments strictly speaking, but rather peritoneal lds which have no power of fixation and with enard I maintain that there does not exist a sus-nsory ligament of the hepatic flexure of the colon. r that matter, these poorly vascularized folds ve little interest for the surgeon. If they are pres-: their division between two clamps is an easy matter and will not interfere with the liberation of the flexure the seat of a neoplasm.

FIG. 1.—Cancer of the hepatic flexure of the colon.

What is important surgically is that the right angle of the colon can be mobilized. A right angle anatomically fixed does not imply a right angle technically difficult to mobilize; and inversely, a right angle anatomically not fixed does not signify a right angle technically easy to mobilize. The degree of facility in mobilizing the hepatic flexure of the colon depends upon the variable arrangement of the peritoneum in relation to the vascular intestinal pedicle at the level of the ascending colon.

In point of fact, the transverse mesocolon on the right branch of the angle is always sufficiently long so that clamps can be easily placed for hemostasis before liberation of the loop. On the contrary, in the case of the ascending colon the conditions are not the same. The presence of a distinct and rather long mesocolon—although not a rarity in the adult as Jonnesco maintains—is nevertheless not constant; very frequently the serous membrane only covers the intestinal circumference partially. The right parietal layer, after covering the anterior surface of the kidney, connects with the colon and applies the bare posterior aspect of the gut on the prerenal cellular tissue or Toldt's fascia. Then after making the same arrangement on the duodenum it becomes mingled with right layer of the mesentery.

Hence one can understand that in these circumstances a free excision of a cancer of the colon may offer many technical difficulties. A cancer which is not defended by peritoneum on the posterior aspect of the gut may contract adhesions with the retrointestinal cellular tissue and from this fact will be difficult to mobilize and excise. Admitting that these adhesions do not exist, the operator, when the mesocolon is absent, is compelled to work in great depth; it will be difficult for him to bring out the upper part of the ascending colon where its division must be made. The peritoneum having been incised the large intestine must be separated from the duodenum and kidney with which it is directly in contact and then to seize the peritoneal layers and immobilize them. The operation thus becomes almost subperitoneal and presents rather considerable difficulties for assuring hemostasis and to peritonize the raw surface. Then, too, the prerenal cellular tissue will have been bared and the possibility of infecting it will require drainage, preventing union by first intention.

On the contrary, an ascending mesocolon will make things easier. It will be possible to work outside of

the abdomen and to place clamps on the mesocolon for hemostasis with easy suture of the two peritoneal layers. Such are the advantages offered by it.

It is evident that between an absolute absence of mesocolon and the presence of an ascending mesocolon having a breadth of five to six centimetres there exist all intermediary conditions and I have only to envisage the two extremes although it must be admitted that they are somewhat schematic.

Nevertheless, I think it can be said that: 1, surgically, the presence of the socalled fixation ligaments of the hepatic flexure of the colon offers no serious obstacle to mobilization of this portion of the large intestine, and 2, its mobilization will be all the easier the more fully developed the mesocolon attached to it.

Etiology.—The hepatic flexure as I have defined it, represents a rather short segment of the large intestine. By this remark one may be surprised at the number of cases of cancer in this situation. Among the 426 cases of cancer of the colon collected by de Bovis, 26 involved the hepatic flexure. If one takes haphazard other statistics of cancer of the intestine we find the following percentages for carcinoma of the hepatic flexure:

Louart	1 in 76 cases	Korte	5 in 42 cases
Lardennois ..	1 in 36 "	Wittmers ...	1 in 11 "
Barbary	5 in 17 "	Cloog	3 in 25 "
Kessler	1 in 30 "	Rötter	3 in 34 "

In all 20 in 271 cases, in other words, 7.3 per cent.

I do not attribute a statistical value to these figures, but it seems interesting to me to compare those obtained by de Bovis in respect to the socalled seats of election of cancer of the intestine.

Sigmoid flexure	27.3 per cent.
Ileocecal angle	32.2 " "
Hepatic flexure	6.4 " "
Splenic flexure	4.9 " "

These data impose a remark, namely, that cancer of the large intestine has in general a predilection for the angular portions and especially for the hepatic flexure. General etiological factors, age, sex, heredity and general diseases are evidently the same as for the intestine in general. The oldest patient that I have been able to discover was sixty-nine years of age, the youngest twenty-seven.

Among the local etiological factors traumatism has been mentioned, but in the case under consideration it can only have a negligible influence as the hepatic flexure is usually protected by the ribs and liver.

But the proximity to the liver may be a danger for the hepatic flexure, because the former viscus is frequently the seat of cancer and it is not uncommon for a hepatic neoplasm to extend to this flexure. I know of no case of secondary cancer localized to the hepatic flexure.

Pathology.—From an examination of the cases that I have collected it is evident that cancer of the hepatic flexure is usually relatively small. Occasionally the process causes a simple thickening of the intestinal wall, while exceptionally the tumor may attain the size of two adult fists. It is prone to assume an annular shape, but often the ring formed by the neoplasm is incomplete.

Microscopically the growth is made up of cylindrical cells, analogous to the cells of the intestinal mucosa. In the great majority of cases the tumor is an adenocarcinoma or epithelioma, more rarely sarcoma. The epitheliomatous types are most common.

The details of the pathology which are of particular interest to the surgeon are those of the neighboring lesions. There are, in the first place, mechanical changes that arise in the gut in continuity with the growth. When the hepatic flexure is stenosed dilatation and hypertrophy of the ascending colon might naturally be expected; they do exist but never to any marked degree. This is because the stenosis is not sufficiently tight for giving rise to complete occlusion for any length of time.

In nearly all cases the neoplasm will be found surrounded by adhesions. When they involve the anterior or posterior abdominal wall they impede operative work, but in the infrahepatic region this difficulty becomes a real danger when the adhesions involve fragile organs such as the portal vein, renal artery or gallbladder. In these circumstances the cancer will often be found to be inoperable.

Symptoms.—In a very general way, all the symptoms of malignant growth of the large intestine may be met with when the site of the tumor is in the hepatic flexure. From the onset there may be localized pain, disturbances of the stools, violent paroxysms of colic with more or less complete occlusion or alternating constipation and diarrhea. Sometimes the stools will be streaked with blood or a true intestinal hemorrhage may take place. In emaciated subjects a tumor may be palpated through the abdominal wall, which is the terminal point of the peristaltic contractions. Lastly the patient's general health declines, the integuments are tinted light yellow and there is a decided distaste for meat.

But all these symptoms—when the lesion is in the hepatic flexure—undergo such changes that the preoperative diagnosis is extraordinarily difficult, often even impossible. It happens that the most important among them may be completely absent, the cancer remaining latent. Or they may be grouped in such a way that they affect the clinical complex of some other morbid process.

I shall, however, undertake to describe their most usual syndrome and the clinical peculiarities resulting from the topography of the parts involved.

From the functional viewpoint the colon is destined to receive the chyme and to evacuate it intermittently into the rectum. But at the same time it causes it to undergo certain changes that can be understood when the condition of the intestinal contents at the ileocecal valve and in the rectum are compared. Then too, thanks to the intestinal juices secreted by the colon chemical changes arise which transform the chyme into feces.

When the cancer involves the hepatic flexure it is seated in a more or less mobile portion of the large intestine in direct relation to the duodenum and quite close to the small intestine so that its contents are still liquid. Thus, until an advanced stage is reached the growth will not give rise to signs of stenosis or intestinal occlusion. In most instances constipation is present at the onset, but acute occlusion is neither frequent nor stubborn. The paroxysms that it may provoke usually cease from purely medical treatment. The atrocious pain in the early paroxysms is out of all proportion to the lesion and intestinal disturbances.

Gastric symptoms certainly predominate. In one case the stools were perfectly regular, but the stomach was dilated and succussion revealed the splashing sound and there was vomiting.

Compression of the duodenum is also an important factor in these disturbances. As it increases in size the tumor occludes the duodenum quite as much as the colon, either from its bulk or by the bands of adhesions that develop.

Other secondary influences acting on the stomach, but all giving rise to symptoms of occlusion should be mentioned. Such is prolonged retention of the gastric contents resulting from dilatation of the stomach. There is no remission of the vomiting until the organ has become emptied and the food ingested a number of hours previously will be detected in the vomit.

De Bovis, analyzing the functional symptoms of cancer of the large intestine, distinguishes seven types of patients and from the viewpoint of the relative frequency of these types he offers the following percentages:

Constipation	37.2	per cent.
Alternating constipation and diarrhea	20.6	" "
Diarrhea	13.6	" "
Occlusion	12.1	" "
Pain	9.8	" "
Dyspepsia	3.2	" "
Negative or objective	2.9	" "

In going over the cases I have collected, I find that the dyspeptic type is by far the most frequent in cancer of the hepatic flexure. Patients with alternating diarrhea and constipation are second in frequency. Lastly come the patients with diarrhea.

In respect to other functional signs—pain, hemorrhage, tenesmus—comment is in order.

In the first place the paradoxical localizations of pain must be mentioned. Although the pain is usually in relation to the site of the neoplasm, it sometimes is confused with pain of lumbar, renal, renal hepatic or appendicular origin, and in many cases it was located over McBurney's point.

As to intestinal hemorrhage, it should be remarked that the liquid state of the feces has little tendency to favor ulceration of the mucosa. Therefore it is evident that this symptom is relatively infrequent and de Bovis only found it three times in fifty-eight cases of cancer situated high up on the colon.

The tenesmus being all the greater the nearer the cancer is to the anus, it is not astonishing that it is not mentioned in any of the reported cases of cancer of the hepatic flexure.

In respect to the objective symptoms palpation gives very valuable data. One rarely meets with a case in which a tumor can be perceived by inspection of the abdomen. Its small size, its situation under the ribs and edge of the liver, often also traction from the adhesions which tends to fix it to the posterior abdominal wall, prevent it from making itself evident superficially.

Sometimes, however, the case may be one in which the evolution of the growth has been long, the patient is cachetic, the muscles of the abdomen are reduced to a mere shred without contractile power so that the tumor may be seen to project under the wall of the excavated abdomen.

An intestinal fistula opening on the surface of the abdomen needs no comment. The diagnosis is evident.

Crämer has carefully studied the intestinal tension manifested by waves causing vibrations of the abdominal walls. This observer, by this sign alone, has been able to locate an intestinal tumor which suddenly arrested the waves on its proximal side.

By palpation of the painful area one may feel the tumor when it is sufficiently developed and estimate its form, size, consistency and mobility as well. In order to do this it is necessary that the abdominal walls shall be perfectly relaxed and it is for this reason that many surgeons resort to general narcosis. In cachectic subjects in whom one can readily mobilize the growth a diagnosis, even an early one, can be made by palpation alone.

Lastly, deep palpation may reveal a more or less marked dilatation of the ascending colon and cecum. By percussion one will obtain—according to the case, tympanitic sonority, meteorism, or the dullness of a fecal tumor due to stasis of the feces.

Diagnosis.—I have insisted on the infrequency of acute intestinal occlusion in cancer of the hepatic flexure; nevertheless the surgeon may have a case presenting the symptoms of ileus and must search for the cause. The age of the patient, the history, disturbances in the stools, melena and emaciation may lead one to suspect intestinal neoplasm.

But these cases are the exception and as a rule the patients are nearly always dyspeptics. The first symptom that they note is anorexia and often vomiting as well. These symptoms are invariably mistaken for a simple gastric disturbance and a purgative is the remedy applied. Now, one might be surprised at the usual success of this simple treatment which almost always causes the patients' distress to disappear, but the amelioration is temporary only, the gastric symptoms recur in an aggravated form and then the physician begins to look for some disturbance of the gastric secretion or an organic affection of the stomach.

The analysis of the vomit or gastric contents after a test meal, may show a normal secretion of the gastric juices, or there may be some change, for example, a certain degree of hypochlorhydria which does not explain the symptoms.

Vomiting might lead one to suspect dilatation of the stomach and in fact, as I have said, this condition is frequent in cancer of the right colonic angle. But, generally speaking, it is not a large dilatation extending below the umbilicus and giving rise to clapotage. For that matter, when dilatation does exist it is to be regarded as a symptom either of cicatricial stenosis, spasm or tumor.

But before searching for positive signs of cancer one must successively eliminate the hypothesis of some insidious inflammatory lesion, such as tuberculosis of the cecum, or an acute one, such as appendicitis or cholecystitis, and lastly a movable kidney.

A tuberculous cecum forms a mass situated low down and from the onset is fixed in place, while a neoplasm of the large intestine is movable, at least at the beginning of its evolution. Then again, the history of a tuberculous patient generally differs much from one with a neoplasm so that confusion between cancer and tuberculosis is hardly justifiable. Unquestionably a bacteriological examination of the

feces will settle the question, because when tuberculosis of the gut exists, the specific bacillus will always be found.

In twenty-two cases that I have collected the diagnosis of appendicitis was made in five. This can be explained from what we know of the topographical anatomy because, as I pointed out, the right colonic angle may occupy a position low down in the abdomen. On the other hand, the clinical aspect of the affection may be the same in each process, namely, constipation, pain over McBurney's point, rigidity of the abdominal parietes and unbearable pain when rectal examination is made. Finally, a cancer of the intestine may suppurate and like appendicitis provoke a rise of temperature. In these circumstances one must observe the progress of the affection, which is insidious in the case of cancer, generally acute if it is appendicitis.

Upon several occasions a cancer of the right colonic angle has been mistaken for an inflammation of the bile tract or gallbladder. This is because the neoplasm drags on the liver and also because it is not uncommon for jaundice to arise in this affection just as it does in cholecystitis, and some patients with carcinoma of the hepatic flexure have been sent to Carlsbad or other spas on account of a mistaken diagnosis. The symptoms presented by these patients are painful digestive disturbances, irregular stools and most often and usually apyrexia which should eliminate the diagnosis of cholecystitis.

In movable kidney it is usually the right one that is affected. When cancer at its onset manifests itself by sharp pain, simulating a loose kidney, or when the pain occurs in intermittent paroxysms simulating hydronephrosis, a right movable kidney may readily be supposed to exist. Confusion is still more facilitated by the fact that movable kidney is habitually accompanied by gastric disturbances such as occur in cancer of the hepatic flexure. Generally speaking, in order to eliminate the hypothesis of movable kidney, one should take into consideration irreducibility of the tumor and the absence of urinary disturbances. But an ectopic kidney may at the same time be tuberculous or contain a neoplasm, hence giving rise to pyuria or hematuria as the case may be; the gastric disturbances due to the ectopia, added to those of the urinary tract, will then constitute a syndrome that it would be almost impossible to relate to its multiple causes.

However, as time goes on, the symptoms accumulate. The patient emaciates, the skin becomes straw color and meat is distasteful. At times one can either see or provoke peristalsis and feel a resistant mass in the abdomen, so that it is no longer possible to exclude the presence of an abdominal neoplasm.

Besides the digestive tract the adjacent organs susceptible to cancer are the kidney, liver and gallbladder and the pancreas. I have referred to the difficulties of diagnosis of a cancerous kidney. Let us now examine that of the cancer of liver and gallbladder.

Cancer of the liver is usually secondary to cancer of the pylorus. It gives rise to digestive disturbances and frequently to jaundice, especially when the gallbladder is involved. Sometimes the neoplastic mass may even compress the transverse colon or the right colonic angle, and phenomena of occlusion may ensue. The clinical syndrome therefore greatly resembles that of cancer of the hepatic flexure. But in cancer of the liver there is a frequent syndrome that rarely occurs in cancer of the digestive tract, namely, ascites. Then, too, a cancer of an organ subjacent to the liver is usually separated from the latter viscus by a space sonorous on percussion. Lastly, and most frequently, one can differentiate by palpation a cancerous liver with its nodular surface from a tumor in the neighborhood of the liver.

Absence of fatty stools is enough to eliminate the hypothesis of cancer of the pancreas.

By elimination, we can make a sure diagnosis of cancer of the digestive tract—stomach or intestine.

It has been remarked that the majority of these patients with cancer of the hepatic flexure are also dyspeptics, and in point of fact the clinical picture of cancer of the pylorus differs little from that of cancer of the right colonic angle. Hence the difficulty will be to distinguish between the latter process with or without occlusion of the duodenum and a malignant process of the pylorus. Very often one can only reach a probable diagnosis based on a minute history of the early symptoms. Generally speaking, an occlusion of the duodenum will have been preceded by intestinal disorders before the gastric symptoms develop.

Maylard has reported two cases in which a postoperative examination, suggested by his mistaken diagnosis, revealed the presence of very distinct intestinal symptoms before attention was directed to a supposed lesion of the stomach. A very carefully conducted deep palpation upon several occasions, under narcosis if necessary, may give results even in the most difficult cases. But there are too many causes for mistakes, among which may be mentioned a possible ectopia of the right colonic angle and fecal overdistention on the proximal side of the neoplasm —that is to say in the cecum—so that a preoperative diagnosis of cancer of the hepatic flexure should only be made with all due reserve, the results of radiography notwithstanding. In the majority of cases the diagnosis of the exact site of the neoplasm can only be correctly determined by laparotomy.

Evolution and prognosis.—The duration of the process depends much upon the accidents of occlusion or complete obstruction, and I have pointed out that accidents of this kind are relatively rare in cancer of the right colonic flexure. De Bovis is explicit when he says: "The left side of the colon is infinitely more exposed to occlusion or obstruction than is the right," and this observer finds that on the right it only occurs in three per cent. of the cases. Then again, the hard type of cancer with a slow evolution is more commonly met with than encephaloid with a more rapid development. For these reasons cancer of the hepatic flexure of the colon often takes from two to three years, or even more, to undergo its evolution. Surgical treatment when resorted to in time may result in a survival of several years, perhaps even a radical cure.

In all cases where the neoplasm can be mobilized and the patient is in a satisfactory state of health, resection of the growth should be undertaken, a free excision, if necessary, comprising the right half of the transverse colon and all the ascending colon with the cecum, being done. After which an ileosigmoid laterolateral anastomosis is made.

Symposium on Neuropsychiatry

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, AUGUST 6, 1924

Psychoanalysis of Organic Conditions*

OTTO RANK

Vienna

Psychoanalysis, as is well known, started originally as a therapeutic measure for the socalled nervous diseases. Today, with all justification, it might lay claim to being the most effective radical therapy, for certain forms of neuroses, the socalled psychoneuroses. From the very beginning, it met with the strongest opposition from the neurologists. At first, obviously, because it was not everyone's concern to take up such a new and strange method which was constantly developing and changing. But, in addition, there is a special factor which prevented the neurologists from making use of psychoanalysis.

The factor is this, psychoanalysis has proceeded as a purely psychological theory and therapy of the neuroses, while the nerve specialist deals mostly in actual practice with physical symptoms, whose psychical causations and components cannot easily be seen without further searching. Yet there has been no lack of advanced psychiatrists and neurologists, who, in their endeavors, have attempted to bring the purely psychological point of view into harmony with the physiological and organic points of view. One must acknowledge that in this field, some American investigators have worked in this specific way. As I am not well versed in the relevant American literature on this subject, I can only pick out some names well known to me, and I will ask you not to be offended, if I perhaps neglect to mention others equally important. When I now refer to the work of August Hoch, Putnam, Jelliffe, Pierce Clark and Kempf, as examples, I do so chiefly to show the trend of investigation I mean. But I believe that all of you and perhaps some of these authors themselves would agree with me that these bold attempts promising so much have not yet gone beyond primary endeavors, and that they remain unsatisfactory in many ways. The same applies to the organo-psychological work, somewhat differently orientated, but having the same aim in view, which as you may well know, was introduced many years ago by Ferenczi (Budapest) in his *Studies of Hysteria and Pathoneuroses,* and then continued with so much promise, by Groddeck (Baden-Baden), Deutsch (Vienna) and others.

*Read before the New York Neurological Society May 6, 1924, at the Academy of Medicine.

Today I should like to put before you a new viewpoint, introduced by me, which in the hands of experts seems to me adapted to further the so highly important practical problem of psychoanalysis of organic conditions. I shall first remind you that soon after Freud began to investigate the content of the unconscious, he came up against the instincts, which according to his own words must be considered as a concept on the borderline between psychical and organic. Then soon, the essential factor in the instincts showed itself to be the sexual impulse, at least where repression was involved. The sexual impulse is known as a biological factor, still nearer the organic. Now the most recent analytical knowledge of the unconscious, the understanding of which I have gained from the analyses of neuroses, states that the deepest unconscious in us—not the preconscious, nor the repressed, but that which was always unconscious—that is, the nucleus of the same is the embryonal stage which continues to exist in us all. This statement may appear somewhat bold. But before I can elucidate it further with examples, I want to emphasize specially that it is no theoretical speculation, nor mere heuristic assertion, but the result of long years of analytical experience of the neuroses.

Here I want only briefly to allude to a result of my analytical experiences, from which I can show you how I came to this specific concept of the unconscious. It has been shown from the study of neurotic symptoms in analysis that the original physiological relation of the child with the mother, as it occurs in the intrauterine state, remains the prototype for every later libido gratification in life, even for the special gratification which we call sexual. It has further been shown, that every time the adult ego fails to adjust itself in reality to the substitute gratification for the unattainable womb situation, it then wishes to fly back again to the blessed primal condition where it was protected and completely gratified. But it is not a matter of merely an unconscious tendency to return to the womb, long ago recognized in analysis as womb phantasy. But my new statement implies that the person is actually in the position really to restore the fetal situation, although in varying degrees. And he is able to re-

produce this or that phase of the primal situation in consequence of the embryonal character of the unconscious, which is kept always unchanged. If you ask me how I know this or how I can prove it to you I should have to refer you to the symptomatology of the neuroses, in which I could without exception, trace back attempts to reproduce the prenatal state. Certainly, I cannot show you here in what a complicated, roundabout way, the adult ego reestablishes this primal gratification in neurotic symptoms. This is particularly difficult, because I would have to acquaint you also with the chief hindrance which stands in the way of a complete realization of this biological regressive tendency, and which causes the ego to assume far reaching compromises. This hindrance lies in the conclusive fact, also gained from purely analytical experiences of the neuroses, which I have described as the trauma of birth. Its importance, as the name implies, consists chiefly in the interference with the most pleasurable intrauterine state, and in the repression of this memory of Paradise, which thus becomes the physiological nucleus of the unconscious. As a guard against the biologically inexpedient striving back tendency of the libido, the anxiety experienced in parturition then becomes psychically firmly established.

I hope that you will be patient if these fragments do not convey much to you, for I cannot repeat in a short lecture the results of years of study, or the material which fills a good sized book; besides we are dealing with a special subject. I shall therefore attempt to discuss briefly the material itself and reserve the theoretical valuation for another occasion. I will first start with the well known typical physical symptoms of hysteria. These symptoms not only in their manifest form, but also in their deepest unconscious content, represent on the whole direct physical reproductions of the act of being born, or, to be more precise of single traumatic details of parturition, on which they are neurotically fixed. And so the patient fails to fulfill the original tendency to return to the former pleasurable situation experienced in the intrauterine life. Here first of all we may mention the phenomena of hysterical paralyses, which represent both the immobile stage of the pleasurable primal situation in the womb, and the anxiety associated with the freeing from the same. The typical symptoms of paralysis characterized by contractures, as well as the disturbances of coordination found for instance in chorea minor, clearly resemble the intrauterine position. I can moreover refer to the fact that Meynert long ago traced back the movements of chorea minor to those of the suckling; but I believe, on the ground of analytical experiences that we have to go still further back to the embryonal position and the reproduction of it. Recently, moreover, Kretschmer traced the convulsive attacks of hysteria to preformed storm movements (*Bewegungsstrum*, as he calls it), and the fainting attack to the death feigning reflexes observed in animals. My own viewpoint which considers both means of expression as reproductions of the birth trauma and the intrauterine state, lies between Kretschmer's phylogenetic parallel and Meynert's individualistic explanation. The advantage of my concept, as you will notice, lies in the fact that it allows us to trace back the forms of the hysterical physical symptoms to their final ontogenetic root, which seems to me of special importance, both theoretically and practically.

I must here abandon all idea of showing you the theoretical importance of this concept, for let us say the yet unsolved problems of hysterical conversion and many other problems. I prefer to speak of its practical applications, namely the understanding which it gives of the actual neurotic symptoms, and the consequent possibilities of influencing them therapeutically. Thus, the neurotic disturbances of breathing observed in bronchial asthma, which are a reproduction of the danger of being choked in parturition, belong to the direct physical manifestations of the birth trauma. Also the neurotic headache migraine, which can be used neurotically in so many ways and has different unconscious meanings, goes back to the particularly painful feeling affecting the head during parturition. Finally all attacks of convulsions as one observes them in quite small children, even in the newborn, represent continued attempts to overcome the primal birth trauma. The popular remedy for infantile convulsions of putting the child into warm water, works obviously by gratifying the tendency to return to the mother. The major hysterical attack which manifests itself in the well known attitude of the arc de circle, is not only recognized analytically as a defence against the coitus position, but also as the reverse of the fetal position; in brief it is a defence against the tendency to give birth, as well as to be born, expressed in organic language.

From the analyses of particular cases, one obtains the definite impression, that the later selection of the form of neurosis is determined in a definite way by the manner of the birth trauma of the person and his reaction to it. I therefore believe that this concept of the psychobiological importance of the birth trauma allows us to base biologically the psychical meaning of the physical symptoms. I say this because it leads back to a state which gives us for the first time a real basis for psychophysiological connections and relations in the unconscious. From the reproduction in dreams of birth and intrauterine states, is only a step to the corresponding physical reproductions in hysteria. From these again only a further step to the same purely organic conditions of disease, which with the same form, have also the same unconscious meaning. The transition of these different forms of disease into one another is so indefinite that sometimes a differential diagnosis is scarcely possible. In tracing back uniformly all these phenomena to the primal state where the psychic and physical are still united, we can understand the content and form of the psychoneurotic symptoms as well as of the parallel organic symptoms. This holds good then for the cases recognized as psychical, as well as for those diagnosed organically or neurologically. For from our viewpoint, it is a matter of indifference whether a real cerebral lesion, or a toxic irritant, or a psychogenic trauma, forces the ego to succumb to the everlasting pressure of the fetal unconscious and thus regress to the protection of the primal source of libido gratification. The uniformity of the symptoms from these

different causes, psychic and organic, then becomes quite obvious, and most of the assumed problems disappear. For the person can do nothing else than go back as far along the tracks of the psychophysical development, as the individual fixation of anxiety and the limits of repression will allow.

The practical and therapeutic significance of this insight is as follows: Just as the same symptom can originate from both sides, the psychical and physical, it must also be possible to influence it therapeutically from both sides. Thus it is to be understood, when, for example, quite recently, attacks of bronchial asthma have been favorably influenced through operations on the larynx; as well as recent experiences in the removal of nervous states of anxiety in children, by freeing the nasal passages. The same neurotic phenomena can be cured psychoanalytically —and indeed just as radically—by avoiding the development of anxiety. Perhaps later, one will even prefer this psychical therapy, when one realizes that in children physically operated on, some time later there develop new states of anxiety, which are localized either in a different organ, or are not at all organically determined. So far as I know, this new development of anxiety appears regularly in children who were operated upon under an anesthetic. This is to be explained according to my experience by the fact that the narcotic sleep is conceived by the unconscious as a reproduction of the prenatal state which reacts to it with the outbreak of anxiety experienced in birth.

You see that this biological concept of the unconscious is important, not only for the understanding and therapy of psychoneuroses, but also for certain organic diseases. Indeed from single analytical experiences one gains the definite impression that a great deal of apparently purely organic suffering saves the person from the luxury of a neurotic formation. Certainly it would be more correct to say, that the neurosis is often a more pretentious substitute for the more banal organic suffering, which also has the same cause and the same psychical meaning. Hence it happens also—as one frequently sees—that a neurosis with its counterfeit physical symptoms really is in the position to prevent an actual disease of the same organ, because it is a substitute for it. In the same manner the therapy of the neuroses, simultaneously with the removal of the psychical roots of the suffering, must prevent the patient from producing physical symptoms in their place. On the other hand also, general practitioners and especially surgeons have to be careful not to establish new psychical symptoms, especially attacks of anxiety from the shock of the operation or the anesthetic. But, as I recently heard, this has already been noticed and guarded against by American surgeons, and I only wanted to confirm and to emphasize this point of view from our psychoanalytical experiences. And so I hope that my statements made from the purely psychical side might be borne in mind by the neurologists and some of the specialists in organic conditions who are in the position not only to apply them usefully, but also to make further investigations and to get new material. I shall be quite satisfied if my paper has the effect of making you realize how necessary it is that we should cooperate more closely and exchange views and experiences in order to be able to develop a more perfect theory and therapy of the organic symptoms and diseases.

Selection of Cases Suitable for Psychoanalysis

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It is understood that suitable for psychoanalysis, as used in this presentation, signifies amenability to psychoanalytical therapy in the Freudian sense, using the technic of Freud. It is also understood that, because a patient is found ineligible for treatment along these well defined lines, it does not signify that he cannot be treated, and helped by means of some other psychotherapeutic measure, like hypnosis, suggestion; by applying (to the patient or to the environment) knowledge gained from psychoanalysis; attempting to bring about a change in the latter, making it thereby easier for the patient to make an adjustment himself; or by applying any other method, as for instance, simply talking over things. In a strict sense psychoanalysis makes certain demands in various fields upon the patient, which the latter must meet in order that the technic may be applied. To present the nature of the requirements which the patient must possess this paper is written. The aim is to define and delimit the kind of patient who is, at the present stage of development of psychoanalysis, amenable to the application of its technic.

In some instances it is a matter of no great difficulty to decide as to the fitness of a case for this form of therapy. Frequently, great care must be exercised before final decision is rendered; a patient may have to be seen for two or three weeks, before the question is decided. However, some data have been sufficiently well established to serve as guides in selection. It may be stated that within certain limits, the amenability of a patient to psychoanalytical therapy depends upon the diagnosis; namely, the type of neuroses the patient shows.

The question of age is one that comes up frequently. As a rule one might say that a patient past the age of forty-five is not favorable, though most analysts can instance patients past fifty successfully treated by psychoanalysis. However the type of personality, the fixity of the resistances, the nature of the problems which the neurosis presents are better guides than age *per se*.

At the other extreme we have the question of the youth of the patient. Children are amenable to psychoanalytical therapy, though in a modified form;

namely, the analyst assumes actually the rôle of the parent substitute; he makes a conscious effort to become friendly with the patient, stepping out of his psychoanalytical rôle of apparent inactivity. In some instances, even in the case of adolescent patients, the strictly passive rôle of the analyst cannot be maintained, in view of the necessity on the part of the patient to have an actual parent substitute. The patient cannot with safety endure the deprivation of love entailed by the passive attitude of the analyst.

It is a good rule that any pathological physical condition, that may necessitate surgical or medical intervention, be treated before an analysis is begun. Any course of treatment likely to interrupt the analysis for any length of time, should be instituted beforehand if foreseen.

The patient and analyst should speak a language in common, sufficiently fluently for complete and easy understanding. The patient must possess an average amount of intelligence. In so far as possible, the patient should know at the beginning the probable duration of the treatment, and its cost.

IMPORTANCE OF CORRECT DIAGNOSIS

A correct diagnosis is the most important factor in determining the amenability of a patient to the special psychoanalytical therapy. In its present state of development, it cannot be applied in cases of so-called psychopathic constitutional inferiority. A brief outline of the essential characteristics of such a patient will throw some light upon the reasons for such a decision. His exaggerated ego interests and his narcissism make the likelihood of his forming a transference to the analyst a minimum one; along the line of his libidinous endowments, we see a great limitation, in that he shows a sadly deficient development of his object libido, in his capacity to love some one, not himself.

The patient is especially lacking in his capacity to show tender, respectful love, called by Freud, *die zärtliche Liebe*, the sexually inhibited love, the repression of which in the course of things, gives rise in part at least to the inhibiting forces of a conscience of guilt and shame. He shows a deficiency, if not an absence of the concept, ideal, either in the form of an idealized object or of an ego ideal. In his environment, and this is true also in regard to his analyst, he cannot form such transferences, or affectionate attachments, as demand a sacrifice of his narcissism, or even his egotism. As Freud expresses it in connection with his differentiation between narcissism and egoism, the egoist may be able to love, but he will not sacrifice his egoism for his love. The egoistic and narcissistic constitution of the patients under discussion obtrudes itself on every occasion. In these patients, narcissistic wounds cause them to tear away from an environment that is painful, to break out in open defiance and rebellion, in contrast to the feelings of inferiority and guilt produced in both neurotic and normal under similar circumstances. The influence for good of the group upon the patient is minimal. He yields little of his narcissistic or egoistic impulses to group demands. The ego wins out at the expense of the sublimating influence of repression, exercised by the individual, family or group. Altruism loses to self interest and pleasure. These characteristics may be observed in the patient from early childhood, at a time when under ordinary circumstances the effects of repression, in the form of a conscience, of guilt, shame, the development of tender feelings, are in evidence. In short, in the patient there does not develop the inhibiting influences ushered in by repression. He remains egoistic and narcissistic.

The next group of patients presents more interesting material, and makes the decision as to suitability for psychoanalytical therapy a more difficult problem. Some of these patients belong in the group, named by Freud, the actual neuroses, like the anxiety neurosis, neurasthenia; in this larger group belong the narcissistic group of the hypochondriacs. Others among them present features of a psychotic nature, though strictly speaking they are not psychotic; from this group, however, dementia precox patients are recruited. The group of patients here considered, show some of the following briefly outlined emotional traits. As children they are quiet, reserved, perhaps moody; they do not mix readily with those of their own age; they are highly sensitive and withdraw readily into their shells when this sensitiveness is affected; are readily hurt and offended; show no ready tendency to make confidences; they are difficult of access. With the years these traits remain or may become accentuated. The circle of friends or acquaintances is not enlarged; the person remains as a rule closely bound to the family group. Investigation into the love life of such individuals shows little play, especially of the heterosexual love phenomena; they only infrequently, and then not very enthusiastically, form crushes or transferences to those of the opposite sex; attachments to those of the same sex are more common, and often more intense, more emotionally tinged, than attachments to the opposite sex. In the matter of forming interests, of an objective sort, these patients show a meagreness and marked limitation in range. Some of these patients achieve and maintain a strong interest in limited fields of activity.

THE PROBLEM OF MARRIAGE

The neurosis is not infrequently precipitated when the patient is confronted with a heterosexual problem, especially at the time of marriage. These persons are poorly equipped for this situation, in view of the demands that marriage and love make upon the ego, and the narcissism. The question of love does not enter materially into their decision of marriage, which not infrequently is contracted for convenience of one sort or another; or a marriage may be entered upon at the demand or suggestion of parents or others interested; or the person thinks that society will consider him inferior if not married at a certain age. Marriage is then contracted to avoid a stigma, or narcissistic wound. Many patients of this type date their symptoms from the time of marriage. Other causes are also responsible for the precipitation of a neurosis.

The resulting symptoms are in the main of the nature of physical complaints, prominent among them being a myriad of gastrointestinal phenomena; complaints of bodily aches and pains, and the paresthesias; feeling of physical weakness. A comprehensive view of the picture leaves one with the im-

pression that an impoverishment exists in the love life, not because of the absence of love in the environment, though this may be the case, but that the patient is poor in his capacity to love an object; there is a fixed state of the libido, in the patient himself. There is also a great poverty in the content of the phantasy life, which seems to concern the ego interests to a great extent. Even in the phantasy activity, let alone in reality, we find only small evidence of the existence of a love object. We note a great limitation in the emotional life, in the field of object investment.

Frank cases of the psychoses, like paranoia, schizophrenia and the manic depressive group, are as a rule not amenable to psychoanalytical therapy. The early dementia precox, the mild cyclothymias, offer at times difficulty in diagnosis, and for that reason may keep open the question for a time at least as to whether psychoanalytical treatment should be instituted.

MANIC DEPRESSIVE PSYCHOSES

A few words in reference to some of the recent contributions, by Freud and Abraham especially, in reference to the more detailed findings in the case of patients suffering from the manic depressive psychoses and allied states. Both authors have done analyses, in the interval and during the depressive phase of manic depressive patients, and feel encouraged in their results. Analysis is impossible in the manic phase, for the obvious reason that the ego of the patient has gained the ascendency, and is enjoying the complete defeat of the ego ideal strivings. No attempt to give the patient insight, which might entail the necessity of his relinquishing the saturnalia of the ego, could prove of avail. In the interval, and in the depressive phase, psychoanalytical insight on the part of the patient might be of aid in exposing to his knowledge the narcissistic libidinous strivings, the wounding of which has resulted in the psychosis, and the fixation in which has resulted to the regression to that stage of libidinous development, in the process of symptom formation. According to Freud, in a manic depressive psychosis, in the depressive phase which develops upon withdrawal of libido to ego owing to the real or a psychological loss of a love object, the love object by a process of identification is taken into the ego (*einverleibt*), and is treated most unmercifully by the ego ideal, in virtue of the anal sadistic impulses, so prominently developed in these individuals.

Psychonanalytical investigations and therapy, from a clinical point of view especially, concern themselves essentially with tracing out the fate of the libidinous strivings, whether these are concerned with objects or the ego. The transference neuroses, which will be spoken of shortly, have taught us what we know of object libido, concerned in symptom formation. The study of the psychoses has given us insight into the libido strivings which have remained fixed in their development in the ego stage, termed narcissistic, or have regressed to that level in the course of a psychosis. The object of the therapy would then be to trace the libidinous strivings which have been withdrawn from objective investment to ego investment, liberate them from these regressive fixations, and make them available to the ego for the purpose of object investment. Abraham states that improvement of definite nature is noted in that even when recurrences take place during or after treatment the symptoms are less marked and show a change in that there is evidence that no complete withdrawal of libido from object to ego takes place; the object is not destroyed in entirety. The hope for a cure in these cases lies in bringing about libidinous development from a stage of narcissism to object love. There is much of promise in the last contribution of Abraham (*Versuch einer Enwicklungsgeschichte der Libido auf Grund der Psychoanalyse seelischer Störungen*) outside of its immediate applicability to the treatment of the manic depressive states.

TRANSFERENCE NEUROSES

The group of patients most favorably influenced by psychoanalytical therapy is that which falls under the classification of the transference neuroses, so-called by Freud, comprising anxiety hysteria, conversion hysteria, and compulsion neurosis. All three neuroses have this one feature in common, that the libido concerned in the symptom formation is object and not narcissistic libido. It is upon this differentiation that the separation has been made into the narcissistic neuroses, previously considered, and the transference neuroses, now to be taken up. It seems practical to follow the plan previously employed in grouping patients according to some common characteristics, even though the symptoms may vary considerably. In this instance also, the phenomena which the various neuroses have in common, namely the phenomena of object libido activity, and which at the same time serve to classify the large group as one favorable from the viewpoint of psychoanalytical therapy, will be described. It may not be out of place to attempt an exposé of these phenomena by means of a case report, briefly given.

A TYPICAL CASE

The patient that is to serve as an example is a married woman, thirty-two years of age, born in this country. She came for treatment some two years ago, suffering, for ten years before her entrance into analysis, from headaches, nausea, and depression, the three symptoms, usually in the order named, appearing from a wide variety of causes, mostly of an emotional nature. In addition she was, and had been sexually anesthetic during the entire marital life, and on many occasions evinced disgust for the sexual act; often this triad of symptoms mentioned followed the act. The symptoms are given merely to make the presentation a little more complete. In reality they have no concern with the problem in hand, for a patient with other symptoms of a hysteria would serve just as well. What concerns us more is the fate of the libido of the patient, its activity before and since the symptom formation. A history of the childhood of the patient will supply us with the necessary information.

The patient was the youngest in a family of several brothers and sisters. When she was six years of age the family moved from a small midwestern town to New York city. Some of her earliest recollections are the pleasant memories of time spent, before her sixth year, in her father's workshop, watching him at his tasks, and doing minor errands for him. She

felt that she was her father's favorite, and enjoyed the preference. Following the removal of the family to the city, the father ceased to be the object of the tender, romantic affections of the child; in this respect he was replaced by the oldest brother of the patient, who had come to the city some three years before the rest of the family, and had prepared a home to which they could come. He it was who virtually took the position of head of the household, and the little patient worshipped him as her ideal, though he did not return her affections in the same degree that her father had. She was an active child, with a great deal of curiosity along sexual lines. About the age of eight, she went to live with a sister, who had just married, and to whom she became much attached; she also became a favorite of her newly acquired brother in law; about this time, the brother, who had been her ideal, ceased to function as such.

Her sexual curiosity, still quite active at this time, about her ninth to eleventh years, was a source of serious conflict and guilt. Phantasy formation, in which boys served as sexual objects, were very numerous. She was enabled to banish them from her consciousness by an attempt at sublimation in the form of religion. Within easy distance from her home the Salvation Army had established a meeting place; the patient, only about eleven, listened at first entranced at the hymn singing, and the salvation promised to sinners, among whom she numbered herself. She was especially attracted by the Salvation Army lassies, and determined to become one herself. Unknown to her family, she attended as many meetings as she could without exposing herself to punishment at home for her absences, and joined in the singing with as much ardor as the most repentant sinner. She took great pride, and joy in being referred to by members as "Our little sister." She read books which extolled virtue, purity and goodness, and promised redemption. This religious activity was successful in allaying the guilt, and the patient lost her interest in the Salvation Army thereafter.

With the onset of puberty, about the thirteenth year, there was a recrudescence of sexual activity, in the form of phantasy, in which a certain boy of her acquaintance was the object; masturbation was also practised, with phantasies of her love object. At fifteen she suffered from typhoid fever, and became violently enamored in a sentimental, romantic manner, of her attending physician, a handsome young man. Before this incident, about her twelfth year, there again developed a romantic attachment to the brother, of whom she had previously been fond. She became jealous of his attentions to other girls, refusing, however, to believe what some of her girl friends told her, namely that her brother was like other young men as far as women were concerned. Her attitude to this brother was the cause of symptomatic stealing of money, on two occasions. One is especially interesting. She had decided, if the opportunity offered, to get a look at his genitals. While he was asleep one morning, she went into his room, with this motive, and instead of carrying out her plan, she searched his trouser pockets, and took some money. The feelings of guilt consequent upon the thefts were extremely acute.

The sentimental infatuation for the young physician lasted about a year, being unsuspected by him. There was a period then in which no special person occupied her thoughts, and during which time she worked contentedly at home with her mother, with whom she at this time was on more friendly terms than on any previous occasion, owing in part at least to the fact that the sister next in age to the patient, who had been the mother's intimate, had recently married and left home, leaving no rival in the home for the mother's affections. When the patient was just past her sixteenth year she fell in love, again in an ardent, romantic, sentimental fashion, with a young man, a gentile. Association with him was forbidden by the parents, but the patient continued to see him, and to love him, without at any time betraying her love, both because of parental commands, and because the young man did not declare his. At twenty the patient married a man whom she respected, but for whom she did not at the time have any strong passionate love. Before her marriage she confided to her father her serious doubts about being able to go through with the marriage, owing to her feeling so strong a love for the other man. Her father advised her in a kindly way about the inadvisability of marrying, from his point of view, a man of another religious faith, and pointed out in a favorable light, the good qualities of her future husband. The patient acquiesced, and married. She was happy in her marriage, with the exception of the sexual life itself. The phantasy life, which had formed so prominent a part previously, disappeared.

Some misunderstanding with her husband caused her to withdraw her affections from him, and at the same time there was a recurrence of her abandoned phantasy activities, chiefly in connection with her last love object. This took place about three years after her marriage. The return of the phantasies was accompanied by depressing feelings of guilt, and self recrimination. About two years later, her one time favorite sister, the oldest, died. The symptoms of headache, nausea and depression then made their appearance. They often seemed to come out of a clear sky, lasted from a few days to a week or two, and then disappeared. The nausea and headache would disappear sooner than the depression.

This in brief is the history of a patient suffering from hysteria, a transference neurosis. A glance at the account of her history before the onset of her neurosis discloses a typical libido activity in a patient who lends herself favorably to psychoanalytical therapy. The patient seeks to effect a disposal of her libido to objects, and when these for one reason or another are unsatisfactory, the libido is withdrawn from the love object, not to the self or ego, but to the love object recreated in the phantasies. There exists in such patients a mobility, a pliability of the libido; a facility in displacing it from object to object, or to interests (religious as described). God and the Salvation Army sisters became the objects invested with love, when that could not with acceptable gratification be expended upon love objects, phantasied or real. Such patients are amenable to psychoanalytical therapy by virtue of a capacity to make transferences. They show a development of their libido beyond the stage of narcissism, in which the patients previously described show a fixation.

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Technical Problems in Psychoanalysis*

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Quite aside from the light which psychonanalysis has cast upon many intricate problems in ethnology and art, pedagogy and sociology, and ignoring the hopes which it theoretically offers as prophylaxis in mental and social hygiene, the prime interest of the medical clinician centres in the application of psychoanalysis as a therapeutic measure and it seems likely that interest in the method will thrive or dwindle in proportion to the successful results which those employing it are able to demonstrate in treating functional nervous disorders, accompanied by or without physical manifestations. Even brief experience in dealing with clinical problems as they are presented to the psychoanalyst reveals many perplexing situations and shows the need for delicate judgment in the matter of selection of cases and of technic in their treatment.

In commenting upon the technical application of psychoanalysis, a patient who had had experience with two physicians remarked, "Two individuals, taught by the same master, may play the same tune on the same instrument according to the same technic and yet the sound be very different." I might add that were this same tune produced identically by the two players it might convey a widely divergent impression to each of two auditors. In reality during psychoanalysis about five sixths of the tunes are produced by the patient, who cannot help but listen to the sounds he emits and who naturally enough expects some comment upon them from the physician.

The secret of successful psychoanalytical therapeusis lies in calling to the attention of the patient the type of sound he is making and why it appears to him to be a discord or a symphony, a dirge or a jazz, but if the analyst does this too abruptly or too insistently in a key which the patient is not prepared to tolerate, the latter may leave to the former the barren option of terminating the duet as a solo. He will not linger to be enlightened as to what his unconscious reasons are for disliking the particular brand of melody he himself produces or the analyst allows to fall upon his ear.

Technical formulations do exist which may be considered as standards for psychoanalysis and which it is desirable to maintain as strictly as feasible, but these neither can nor should be considered absolute. Psychoanalysis aims for a most impersonal contact between physician and patient, but the personality of the physician cannot be entirely eliminated—revealing itself in the tone of his voice, phraseology and even in his very impartiality and impersonality. This accounts for the fact that occasionally a patient will cooperate better—technically speaking, transfer better—with one analyst than with another and thus allow sufficient time for the physician to bring to consciousness the motives for the particular attractions or antipathies which the patient exhibits.

*Read before the New York Neurological Society, May 6, 1924.

SELECTION OF CASES

Assuming that the patient has agreed to select the analyst, the latter must discriminate in the type of cases suitable for treatment. In the first place, the differentiation of psychogenetic from organic conditions often is the most vexing proposition encountered in medicine. Many a skilled diagnostician will confess if he be truthful, that a suspected gastric ulcer has turned out after laparotomy to have been a gastric neurosis and that autopsy has sometimes revealed that persistent vomiting called hysterical had been caused by constricting and occluding intestinal adhesions. Analogous situations might be cited in connection with every specialty in medicine.

Therefore, we should be as certain as possible that the malady is preponderatingly functional before attempting psychoanalytical treatment. If physical basis for the complaint is excluded, a corroboration of the negative findings by other physicians is an aid. Even in conditions where the physical complaints are apparently trivial, such as headache, insomnia, or indigestion, selection requires discernment. Thus a man of twenty-six with a mild case of glycosuria—one per cent. on a full carbohydrate diet—showed so many nervous symptoms that the medical visiting physicians of the hospital requested an investigation into his personality. He suffered from a typical masturbation conflict. After a thorough consideration of all factors, it seemed advisable temporarily to ignore the organic side and treat him psychologically rather than dietetically and medicinally.

Where the nervous disorder is confined to mentation, without any conversion of the psychic conflict into somatic symptoms, it is essential that the patient himself recognize the condition as abnormal (technically known as insight). Psychoneuroses as a rule are associated with a considerable amount of mental depression, and the differentiation between such incidental dejection and the retardative, self-accusatory depression seen in the manic depressive psychoses may not be simple, particularly because the patient has insight in both these maladies. During the phase of active depression in a manic depressive psychosis, psychoanalysis is not only ineffective but is likely, through forcing the contemplation of painful psychic factors, to intensify the pathological mood and delay recovery. Psychoanalysis undertaken during the interval between manic depressive attacks as a prophylaxis against recurrence (L. Pierce Clark) appears theoretically reasonably valid in those types of recurrent depressions which seem to be a regressive protective defense reaction against external demands or internal urges which the patient because of unconscious motives feels inadequate to face. Convincing proof of its permanent therapeutic efficacy must, because of the normally intermittent course of this form of psychosis, remain in doubt for many years to come.

The approximation of some of the symptoms ac-

companying the neuroses to those of the dementia precox group is occasionally so gradual that the experienced psychiatrist may long question the type of disorder confronting him. The dementia precox (schizophrenic) reactions are serious mental involvements, embraced in the term narcissistic neuroses of Freud, and are not very amenable to analysis. In such cases a persuasive reeducation of the patient, dictated by a psychoanalytical knowledge of trends commonly likely to motivate the symptoms presented, takes preference over true analysis. Where a well organized paranoid trend exists, the prospect for a cure by psychoanalysis is almost as hopeless as it has been by previously available methods.

CONCERNING SUGGESTION

The adoption of the conversational waking procedure vitiates the validity of the accusation that the associations discovered during psychoanalysis are suggested to the patient, who is usually of the type particularly susceptible to suggestion. The fallacy of this criticism becomes apparent after a slight acquaintance with neurotic patients. They resent with a vigor which may amount to defensive dishonesty, any imputation which they consider disparaging to their conscious ideals and many disclosures made during analysis are such as the patient has come to consider, through education or otherwise, as discreditable. This makes it impossible for the analyst to suggest associations in the ordinary sense.

It has been implied that the procedure as a whole is nothing more than an elaborate system of suggestion; that the practice of telling a patient that his habit disorder is due to faulty mental adjustment or to some repression which when brought to consciousness will cure him, constitutes in itself a powerful systematized suggestion. Such a criticism cannot be refuted in toto. Certainly clinical experience has shown the impossibility of forcing specific suggestions upon a patient—damaging or otherwise—for these elicit no response from the patient's unconscious and the seed of suggestion falls on barren soil. If there be any suggestion whatsoever, it is indirect, impersonal, unspecified and the fact of its acceptance by the patient is of positive, corroborative value to the physician who knows its significance, because as a result of his investigations, he has gained an insight into the patient's secret yearnings, forbearances, struggles and conflicts from earliest infancy. In contrast to older forms of suggestive therapy by hypnosis or persuasion, psychoanalysis intentionally avoids specific, determinate suggestion and whatever the patient chooses from the mass of possibilities presented to him in the course of treatment, he does only because it fulfills some unconscious need.

If psychoanalysis had accomplished nothing more than this individualization in the consideration of factors producing nervous symptoms, it would represent a distinct advance toward the better understanding of functional disorders, consistent with the personality and temperament of the patient.

TECHNICAL CONSIDERATIONS

As a curative measure psychoanalysis is most promising in cases of psychoneuroses in intelligent, though not necessarily exceptionally well educated, persons of either sex between the ages of fifteen and forty. Although one opponent of psychoanalysis would advocate a law to prevent its application upon adolescents (1), the most striking cures have been effected in just this group. As a matter of fact, persons beyond forty years of age, because of their mental rigidity, are, generally speaking, not the most favorable subjects. As regards age this dictum is by no means absolute, and depends more particularly on the mental plasticity of the patient, for some individuals at fifty show slight evidence of evolution from primitive emotional reactions.

For obvious reasons the native language of the patient should be that of the examiner, and the analysis should be performed in the environment and country where the immediate conflict exists. Not less than four hours a week for four months or more must be devoted to the procedure. Often a more or less diagnostic, tentative series of five analytical hours may be advisable to learn how the patient reacts, but before prolonged treatment is undertaken an uncolored explanation of its nature and the results to be expected proves most satisfactory to physician and patient alike in the end. While a positive cure should never be offered, the acceptance of a patient for treatment is a tacit implication by the analyst that an improvement is to be expected. It is perfectly justifiable to attempt to overcome the initial rationalized opposition, though urgent persuasion of the patient to undergo treatment is a technical error. Early resistance to the revelation of unsavory sexual experiences gradually vanishes after the analysis has actively progressed, and the patient appreciates that these occurrences entail no personal significance for the physician but are regarded in the light of dry facts, arousing neither sympathy nor censure.

Patient and physician should preferably be total strangers before the commencement of analysis, in order that the impersonal attitude in the treatment may not be influenced by preexisting tendencies and prejudices which are found in every acquaintanceship. Intimate previous associations, while not an absolute bar to analysis, contribute a heavy handicap for both parties. The same holds good for social association with the analyst, so often tentatively essayed by the patient during the course of his treatment and for discussions of the case with members of the patient's family. Interviews with the latter only lead to distortion or misrepresentation of the physician's aims in the sittingroom controversies which invariably ensue at home after the relative's visit, and this complication is precluded if the affair remains restricted to the patient and the physician. At the initial conference the exacting requirements of treatment should be explained to the patient who should assume the task of making necessary arrangements with the persons upon whom he is dependent.

Family opposition forms a stubborn and annoying form of antagonism and is particularly baffling as it operates clandestinely and inaccessibly, emanating from sources beyond the control of the physician. Seeing scant evidence of improvement in the patient, as may be the case even after considerable time has

been spent in analysis, they advance well defended objections to continuation on grounds of practicability, feasibility or expense.

People usually select the most agreeable way offered for the solution of a difficulty and psychoanalysis cannot in any sense be represented as a remedy of unalloyed pleasure. Compared with a trip to California or a cure at a spa with a companion or nurse, it offers little to attract a pampered neurotic and a mere statement of the laboriousness of analytical procedures often prevents acquiescence to treatment.

Moreover, predictions concerning the length of time required before the distressing symptoms may begin to disappear, to say nothing of a complete cure, can be only vaguely ventured, for it is quite impossible until an analysis has penetrated to some depth to gauge the extent and intricacies of the patient's thought ramifications or the tenacity and the strength of his resistances, especially the defense of his narcissism. After analysis is well on its way, it is not uncommon to hear a spontaneous avowal of the realization that the desire to be cured lacked complete sincerity because of the secondary gain in the way of self pity or attention which the illness yielded the sufferer.

CATHARSIS AND PEDAGOGY

A patient once remarked after a few hours of conversation, "There is something mentally invigorating—I might say spiritually cleansing—in getting this off my chest." Nevertheless confessional history or mental catharsis, though incidental to psychoanalysis, is not analysis, and will, except in the mildest cases, leave the patient quite as perplexed in regard to the unconscious factors responsible for his symptoms as he was before. Indeed, one patient reported that she had been sharply scolded by a physician for withholding something, when the symptoms failed to disappear through confessional treatment. Assuredly she could not be expected to reveal what she had forgotten—perhaps did not even know.

The study of the patient's personality may have led the analyst to definite conclusions as to the patient's needs when viewed objectively, but he should make no insistent attempt to impose these opinions upon the patient. It might be his conclusion that a change of occupation or environment or a marriage would prove beneficial but instead of ordering these changes, the analyst would gradually undermine the inhibitions and resistances which tended to keep the patient in the existent undesirable situation, until he would find himself drifting voluntarily toward the appropriate goal. On the other hand, if the analyst is forced to undertake counseling, as he sometimes must at the outset of a treatment begun at the time of a situation fraught with delicacy and possibly peril, the advice should be guarded—rather an enumeration of alternatives than direct counsel. In this respect psychoanalysis differs radically from most other medical measures. One of my favorite responses to the ever recurring demand for advice or a decision is, "It is not what I think but what you think that counts."

To what extent the analyst is warranted in assuming interference and direction is still a mooted point. Ferenczi (2) in 1919 wrote of the desirability of inducing the patient to relinquish the security which his fear affords him and to attempt to face those very situations which he fears most or feared most in childhood. The object of this active therapy is not a cure through persuasion or reassurance of the patient of his ability successfully to meet the apprehensive situation, but aims to uncover fresh, previously unrevealed analytical material. Recently a tendency has developed to emphasize this idea of active therapy with a view to hastening the therapeutic results.

Psychoneurosis is paramountly a mental disorder found among the intelligent and educated, but it is occasionally encountered in those who are unable to grasp the methods and aims of analysis. In such persons treatment must be attempted by other methods, such as suggestion, hypnosis, persuasion or reeducation.

There is a definite distinction between the approach to psychiatric problems in an advisory or pedagogical capacity based upon a knowledge of psychoanalytical interpretations of symptoms shown and the complete analysis with a revelation to the patient of his unconscious motives so that he may, subsequently, independently determine upon his course of action. Socalled psychosynthesis should occur spontaneously as the result of analysis. Such psychoanalytical pedagogy is especially indicated in the minor neurotic disorders of childhood and adolescence and the psychotic episodes of the constitutionally inferior.

The vexing problem as to how much reeducation and advice is to be interspersed in an analysis, how thorough and deep an analysis should be in each particular case, and even judging when an analysis is finished, can only be determined after long experience and is bound to vary with the needs of the patient, to say nothing of the inclinations of the analyst. There is no question that in certain cases the analysis which is not so profound may produce more satisfactory curative results. Many a time when the unconscious is revealed to the patient with the greatest of caution, his reaction may be such as to cause him to rebel against the entire procedure and discontinue in a badly confused state or the situation disclosed may be virtually irreconcilable with actual exigencies.

Experience with these irksome family situations warrants the opinion that in some cases an analysis spread over a longer period of time—a year or more—may possess an advantage over a more intensively applied process in that it allows the patient greater leisure to become consciously acquainted with the type of personality which emerges when his inhibitions are removed and also permits people about him—especially members of the family—additional time to adjust themselves to the new individual appearing in their midst. One man put it, "Psychoanalysis has shown me a new world but whether I can move about in it without smashing up is another question."

Psychonanalysis cures through the revelation of unconscious motives and through the overcoming of inhibitions and resistances—from my experience the latter, especially those resistances which tend to in-

trench the person in narcissism, appear to be far the more important. Such resistances must be called to the attention of the patient again and again—each root which nourishes the trunk of narcissism traced, minutely examined and eradicated. Often he understands the reasons for the pathological condition so well but can overcome them so very, very slowly! To quote again, "Psychoanalysis has brought me by devious pathways right up to the gates and now I feel I cannot enter." And again the resistances must be reconsidered.

Happy therapeutic results in sex abnormalities, impotency, masturbation, etc., are at times attained where the unconscious is barely touched. When neuroses persist well on into adult years, the infantile roots of unconscious longings must be revealed to a greater degree, but I think it unquestionable that many pathological impressions, especially in regard to sex, can be moulded through psychoanalytical insight and technic, with little unconscious material being brought to light, at the time of the momentous physiological and psychological changes coincident with puberty. Assistance at such a time is of enormous importance in determining whether the individual shall revert back to infantile psychosexuality or progress to the point where he can fall in love. While analyses show that many of the causes (misinformation, shocks) to which neurotics attribute their failure in sex adaptation are socalled cover memories or accentuations of isolated details which harmonize with infantile impressions, it is more than likely that proper information and careful instruction in sex matters at opportune moments, according to analytical precepts, would have gone far to produce adequate adjustments.

SPECIALIZATION IN PSYCHOANALYSIS

The question has been raised as to the validity or necessity for specialization in psychoanalysis on the part of the psychopathologist. The reply is that the attitude of impartiality and impersonality in psychoanalysis differs so essentially from the directing and advising viewpoint assumed by and expected of the practitioner in other branches of medicine, that it is almost impossible for the physician in the habit of using the latter method to alternate his attitude from hour to hour with sufficient certainty not to interfere with his effectiveness either as an analyst or a director.

Psychoanalysis will in the end survive or fall as a method, quite regardless of the truth of its theory, upon the cures which it produces. Some day a short cut or an abbreviation of the technic may be discovered—certainly it is to be desired. Anent the failure of the present method at the hands of competent psychiatrists, one may assert, without the slightest impugnment of their psychiatric skill, that this is in a large measure attributable to lack of familiarity with psychoanalytical technic, which must be constantly practised for the attainment of efficiency. This means a thorough knowledge of Freud's theories, an analysis by another analyst and an acquaintance with the manifest mechanisms shown in functional psychoses; through the detailed study of the thought content of dilapidated dementia precox and rampant manic cases in which Freudian mechanisms are so evident, that no analysis is required. A second avenue of approach to psychoanalytical proficiency is through the initial study of those mild neuroses which differ only slightly from normal reactions and through the field of normal psychology, which Freud's ideas are rapidly invading.

A word in regard to a tendency to make something akin to a cult of psychoanalysis. A patient having considerable acquaintance with psychoanalytical practice and literature described it as a system which is "the last word in conventionality and orthodoxy, which pretends to be free but which worships ritual." Behind this exaggeration lies just enough actuality to warrant a brief refutation. Psychoanalysis might easily be transformed into a rigid code or creed, standardized according to the formulations of Freud with an *ipse dixit* as a criterion and a cry of heresy at each deviation. Such an attitude which is really quite foreign to the modest spirit or moderate practice of Freud, must in the end stifle scientific investigation of psychic problems and react unfavorably to therapeutic success.

Most well qualified psychoanalysts have had considerable experience with the methods of the older schools of psychiatry (Kraepelinian and kindred systems) and with purely empirical attempts to influence neurotic disorders. They have found that the therapeutic outlook with the measures available under these systems is distressingly discouraging, unless the diseases (such as alcoholic, infective exhaustive and manic depressive psychoses) are in their very nature self limited.

And yet, it would be misleading to convey the impression that all cases which satisfy the ideal requirements for analysis, namely insight, desire to be cured, and satisfactory financial and environmental conditions, always are cured by analysis. So far as I know, failure in such cases has been encountered by the most competent physician analysts. At present earnest investigations are being made by analysts the world over to discover where the fault lies. Many physicians are inclined to attribute it, first and foremost to their own shortcomings, especially mistakes in the handling of transference, but its failure may also be ascribed to a lack of adaptability of certain patients to the method, particularly that type of persons who has no likes or dislikes, or who is content to give up after short-lived efforts.

Nevertheless from a long experience in the continuous practice of psychoanalysis in selected cases, I can assert that while the results were not unqualifiedly successful in each instance, they had been infinitely more satisfactory than one finds recorded by previous methods in the treatment of psychological abnormalities. Only those who have had a minute inspection of the mental martyrdom which accompanies these psychosexual difficulties can fully understand what the rending asunder of those invisible fetters which enslave freedom of thought and action, means to the sufferer.

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A Note on False Confession

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The psychology of confession has been inadequately studied. The motivation of normal confession is complex. Between lovers mutual confession is common. Here it might be considered a kind of psychic exhibitionism, a mutual unveiling. It also serves to awaken common sympathy and tenderness, but more important, it favors the process of identification, an important element in love, since it enables each to identify himself not only with the other's present but also with his past. Then also we occasionally witness the demand on the part of one lover that the other confess. It is usually the man who makes this demand. It then constitutes an unwarranted form of sexual aggressions. The impulse to confess when confession is undesired and inappropriate might also constitute an aggressive impulse as in the case to be outlined. Confession in this case was thus an aggression and a lure similar in this respect to the obscene joke.

The effect of confession *per se* in its relation to analysis should be studied. No doubt in itself it has something to do with the development of a transference. It may also be one of the motives of negative transference. To the extent that the person does not wish to confess there must be an element of hate engendered against the one confessed to, because to confess means to surrender some precious part of oneself into the hands of another, to give up to some degree one's sovereignty over the kingdom of himself.

During one of my earliest analyses I had occasion, suspecting the development of a mastoiditis, to send the patient to an ear specialist of her own choosing. She returned with a story of his having taken undue liberties with her. I told her there was no need now for her to see him again. But she did go back twice, each time coming to me with the same story. I thought then that considering the character of the incidents related, her reactions were excessive. Long afterward when the analysis was practically over, she told me that there was no truth in her stories about the man.

In this instance transference probably accounted for her tales. She had no interest in the other physician and ceased to return to him as soon as she saw that I paid no attention to her complaints.

About eighteen months ago a patient was referred to me by the president of the board of directors of a missionary society. She was brought to Cincinnati accompanied by a physician from the missionary station in South America where she had been serving as a teacher and nurse in a hospital, with a history of a severe attack of hysterical confusion. It was even implied that she was insane. I could secure from her physician only a vague and indefinite history. He had seen her only once or twice during her attacks and noted nothing unusual in her conduct on the long journey from Lima to Cincinnati. She was said to have displayed great sexual excitement and to have told many contradictory stories. Her physician spoke of the case as one of nymphomania.

The patient, M. B., was thirty-one and single. The physical examination was negative. She was quiet in demeanor, and apparently phlegmatic in temperament. Certainly not of an evidently nervous type. She was eager to understand the motivation of certain peculiarities she had shown during her life and hence cooperated in our work.

Prior to the attack that was the occasion of her return to the United States, she had done well as a missionary and felt that she had enjoyed her work. Her memory for the whole attack was quite clear, and she was able to give me a complete account of all of her words and actions, her motives only remaining obscure to her.

Miss B.'s station consisted of a hospital manned by three physicians and several young women, of whom the patient was one, who acted as nurses. All were from the United States.

One week before the episode of excitement, Miss B. told the other girls of a letter she had just received from Mrs. A. of Cincinnati who was president of the missionary board. This letter, she said, demanded that she explain certain events of her past life, implying that her past reputation was being questioned. This was one of certain characteristic preliminary remarks casually made that often preceded prior confessions she had made in her life. Its purpose was evidently to excite interest and pave the way for further revelations. A week later she showed signs of great distress while writing a letter. This also excited interest on the part of the other girls. She pretended that the contents of the letter had to be kept a deep secret. The next morning at breakfast she appeared to be depressed and to be having difficulty in keeping back the tears. To their questions she said that she had received a letter about her father that worried her greatly. Later in the day she elaborated this story. She said that her father had seduced a young girl and that the girl's mother had written her, the patient, stating that she must finance this girl, who was supposed to be pregnant, to save her father from further trouble. This story was highly detailed and circumstantial. It was apparently spontaneous and sincere but she said, in relating the tale to me, that the night before as she lay awake it had gradually been taking form in her mind. "It came out contrary," she said, "to my resolution not to tell such stories." But she was not conscious of any motive.

The following day she transferred her story to experiences involving her own past life. She told of visits she had made to a cabaret in Cleveland. The expression *cabaret* here was merely a synonym for house of prostitution. The meaning of this we shall see later. With great detail and apparent sincerity she told the girls of fantastic and obscene revels that she saw there. This account seems

to have created the sensation that she wished for, and the next afternoon she still further elaborated her story. Many of these details it will be necessary to omit, but she said she had visited this place eight or nine times over as many week ends. In her story her escort importunes her to submit to him and beats her about the genitals, causing great swelling so that she is unable to walk. Finally she admitted to having had intercourse with him and three other men.

All of this fantastic tale was sheer invention. She confessed to a constant and intense sexual desire and asked the other girls to protect her from giving away to this desire. For two nights she forced one or more of them to sit beside her bed and hold her hands to prevent masturbation. She threw herself about the bed in hysterical convulsions, all the time reiterating expressions of desire and lamenting her past experiences. She sent them to search for a bottle of carbolic acid that she had hidden in her coat pocket but all the time, she states, she had not the slightest intention of committing suicide. Even her expressions of passion and desire were highly exaggerated. She was clearly conscious during the whole time that the whole affair was merely a dramatization and an elaborate lie. In the actual presence of men she was never conscious of any sexual desire whatever. Even her statements about her desire to masturbate were highly exaggerated. She had masturbated at intervals during her life, but in very moderate degree.

Finally a physician was called who gave her some sedatives. She was kept in bed, and a few days later began to retract her story saying that it was only partially true. Later she admitted that it had no basis of truth whatever. But by this time her conduct and actions caused those in authority to decide that it was wiser for her to return to the United States, as previously noted.

When I undertook to investigate the incidents preceding this hysterical episode, I found the following remarkable occurrence: Three weeks previously to the first of the attacks, a girl, one of her associates at the missionary station, went walking with a young man along a lonely stretch of beach. Meeting eight soldiers, the girl's escort was seized and bound to a tree while before his eyes the girl was thrown to the ground and held by some while all the soldiers in turn criminally assaulted her. This girl was not permanently injured but was confined to her bed some days under the care, principally, of Miss B. The genitals were swollen and for a time she was unable to walk. This was one of several elements in this tragic episode that furnished material for the patient's prostitution fantasy.

Miss B. said to this girl when she was relating how she attempted to guard her body, "I wish it had been me." When the girl, surprised, asked her why, she said, "Because I have not always been so successful in guarding my body." This was the first of the casual allusions that finally developed into her remarkable confessions.

Miss B. came from a middle class family in northern Ohio. Her father was of a peculiarly stubborn and illtempered disposition, but rather religious and with many fantastic ideas. Her mother was apparently unhappy and was released of her burdens by death when the patient was seven years of age. A year later the father married a neighbor woman, bringing some half brothers and sisters into the family. All the time the father seemed to bear the patient, of all the children, some especial grudge. He appeared to single her out for ill treatment and excessive demands. Nothing she did—and she tried hard to please him—could satisfy him. At once instance, she never did her work well enough and her grades at school were never high enough to satisfy him. His attitude was evidently a defense. One evening after some unhappy episode with her father she went out on the porch and, looking up at the stars, said, "If you don't care for me any more than this, God, then I don't care for you." She often repeated this remark in later years when in any difficulty.

But the remark caused her to think later that she might have committed the unpardonable sin, which worried her for some time. At about the age of ten, three boys and one other, her brother, took her to the barn and had intercourse with her. It will be recalled that this was the number of men mentioned in her prostitution fantasy,—three and one other, her escort. This episode appeared to leave no ill effect and she seemed to have enjoyed for the most part a fairly normal childhood. She was, however, considered very much of a tomboy. On some occasions she indulged in sexual play with her brother or other girls. Between the ages of twelve and sixteen she became profoundly religious and underwent the usual adolescent religious doubts and experiences. At this time she conceived the idea of being a missionary. This idea was evidently motivated largely by the idea of escape. Also at about fifteen or sixteen she often thought of running away and becoming a prostitute. Indeed she stated that between this age and the age when she actually entered the missionary training school she had frequent doubts as to whether she should become a missionary or a prostitute.

At about her fifteenth year she confessed to a friend a mad craving for liquor. She actually had no such craving but enjoyed her friend's shocked attitude. Several times about this time she confessed to such a desire and also to wishing to smoke cigarettes, her naïve symbols for devilishness. She describes this period of longing and religious doubts as a real storm and stress period of her life. "Sometimes I thought I was a Christian, sometimes not. Sometimes I believed in God, sometimes not." During her last year in high school she once stayed after school in apparent distress of mind. On her teacher's asking her the trouble, she told her that a certain married man in the neighborhood was molesting her. That she had been out with him several times and that he pursued her with unwelcome attentions. All the time, she states, she knew that there was not a word of truth in the statement." Some days later she repeated the same confession and permitted her teacher to infer from her lack of response to direct questions that she had had intercourse with this man. She then asked the teacher to get a bottle of carbolic acid from her coat pocket. This the teacher found, but all the time she had had no intention of committing suicide. Again she even one evening stopped at her teacher's home, told her

that she was being followed by this man and begged her to escort her home. Both of these elements, it will be recalled, were repeated in her adult attack.

All during this period she suffered from despondency, although as she says, "I don't really think I was as despondent as I seemed to others." Due to her father's bitter opposition even to the most brief and innocent association with a boy, until she was nineteen she had no male friends whatever. A brief interest at this age was broken up because of her father's violent threats against the young man.

When twenty, Miss B. went to a neighboring city and began to teach, living with an aunt. Here she attended the Baptist church merely because the teacher to whom she had made her first confession was a Baptist. Among her new friends, she posed as having had a past, having drank and smoked and implied worse things, so to speak. She returned home in the summer and found life with her father more intolerable than ever. She now returned again to this town, living now with a friend, and taught country school there for five years. During this time she told to three different women friends a tale of being engaged to a young man who was a drunkard, and said that this stood in the way of her marriage. She was always, of course, advised against marrying. There was no truth in this tale. To one of these women friends she also confessed a desire to drink, smoke and play cards. She also told this woman the seduction tale referring to her father. The woman was much shocked. She spent the night with her and for hours moaned and sobbed, complaining of the difficulty she had in keeping virtuous. This was also not true, as she had but little interest in men. Finally she begged her to have "immoral relations" with her, as she expressed it in her biographical sketch. To one of the other girls to whom she made the same false confessions she also made frequent and violent erotic advances, always ending by begging her to enter into a homosexual relationship with her. In no instance were her advances reciprocated. During this period in two instances, young men whom she met casually attempted intercourse. This came to nothing. She was not much interested and resisted through fear of consequences. She never saw them again. She took to moderate masturbation, carrying it out in ways she had heard described by a Y. W. C. A. lecturer who said that it would drive one insane. Before this she states she knew nothing about it. Her autoerotic fancies concerned her girl friends. She was also quite narcissistic, being fond of posing nude before the mirror. Her masturbation was of the aggressive type, as she made use of objects external to herself, such as a blanket or a chair.

During this period of her life she carried out the following strange dramatization: She said that she had put her foot through a hole in a rotten plank on the school porch and injured it. She stayed in bed a week, rested her foot on a chair for another week and walked on crutches for some time. Even in after years she often referred to her bad foot. The school board paid her salary, that of a substitute teacher, and her doctor's bill. She was at the time unaware of any motive for this deception. On other occasions previously she had indulged in malingering, once purposely burning her hand in the chemical laboratory.

Finally she entered a missionary training school. Here, too, she confessed to a teacher of a craving for alcohol. She also confessed to this teacher, a woman, that she was greatly troubled because she had learned that her father had seduced a young girl. This was the second time that the young girl seduction confession involved her father. The following summer she confessed to another girl student of a craving for drink, for selfabuse and of relations with a married man when she was sixteen. She appeared nervous and excited. She was put to bed in a hospital and a woman physician sent for. This physician dilated the cervix and amputated the clitoris. The patient now had frequent attacks of feigned unconsciousness during which she used profane and obscene expressions. It occurred to her that she ought to run away and find a man, but she compromised by smoking cigarettes.

She had one or two further erotic crises with accompanying confessions. After she had concluded her missionary training school courses she became engaged to a theological student who was intending to go to India as a missionary. This was in the spring of 1921. He wanted her to marry him immediately but as he had four more years to study, this she refused to do. By autumn of that year he was engaged to another girl and the patient left for South America, where two years later the hysterical attack already described, which resulted in her return to the United States, ensued. The breaking of her engagement to the theological student left her quite unmoved and she was apparently indifferent when she received a letter from him stating that he was about to marry the other girl. Her relation to this man had no erotic quality whatever.

Before she left Lima and as she told the other girls that the stories she had told them of her cabaret experiences were not true, they remarked that they could hardly believe this, as in the telling all her emotional expressions had seemed so deep and genuine. In every instance where she had made a confession, she wrote to the woman confessed to, months and sometimes years afterwards, admitting the falseness of her statements.

Her missionary attempt thus had to be given up. As either a prostitute or a missionary she would not have been, was not, successful. Both are essentially artificial, in most cases being merely attempts at escape from reality, the outgrowth, in many instances, of an emotionally starved childhood. Yet she might just as easily have become a prostitute as a missionary. However, such qualities of her character as made her a good missionary would have interfered with her becoming a successful prostitute and on the other hand her prostitution fancies ended her life as a missionary. A craving for sharply contrasting pathways in life generally means that neither is best for the individual.

It will be noted that she fluctuated between affirming and denying God, between good and bad, between male and female, and between sadistic and maschochistic attitudes. The malingering episode probably had a symbolic meaning. The meaning of the frequent tale of father and young girl seduction

is sufficiently clear. The confessions per se were in some degree modes of homosexual aggression but at the same time, their content being heterosexual in character, they undoubtedly expressed such impulses extending far back to childhood. The patient became clearly conscious of her divergent impulses, the later homosexual overlying the earlier heterosexual, a reversal of the usual order of development. The rape brought so vividly to her attention activated associational systems surrounding the childhood episode of a similar character. Her hysterical attack was thus in the nature of an abreaction to that earliest episode, symbolically expressed.

Because of this and other reasons, her relation to her father, principally, the pathway to a normal heterosexual development was blocked. Her homosexual gropings might then be regarded as attempts to return symbolically to the father as represented by their details of expression, but principally to the mother as represented by their objects. In times of stress the neurotic will often show in some degree the flight back to the mother image. The deepest wish is again to become identified with the mother, as is the child in the womb. In this case the mother image was sought in the women confessed to. In many instances they occupied a motherlike relation to the patient.

In this connection it is interesting to recall that it is to the mother we all first confess. Thus also in passing I may observe the confession element in the analysis may tend to favor the identification by the patient of the physician with the mother, elements of which identification may sometimes be observed. Finally, one may ask oneself, to what extent does the search for the mother, the attempt to return to the mother, or the identification of other women with the mother explain homosexuality in women?

Miss B. was advised to give up her missionary ambitions. She went to northern Ohio and again began to teach. A year later I received a letter from her in which she said that she was building a new and happier life for herself.

The Psychopathic Child*

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The psychopathic child has been the subject of much comment in recent years. One hears of him in schools, clinics and institutions. In discussing him it may be well to arrive at a definition as to what sort of being he is.

The word psychopathic may or may not be a fortunate term. It came into use first through psychiatry, applied to the mentally unstable, and at times to the morally unreliable adult. The word constitutional is often linked with psychopathic, suggesting that psychopathic conditions are inherent. In psychiatric classifications the following conditions are classified under constitutional psychopathic states: emotional instability, inadequate personality, nomadism, paranoid personality, pathological liar, sexual psychopathy, alcoholism, drug addiction, and criminalism. If we use the term psychopathic in speaking of children, we must appreciate that it is going to have a somewhat damning significance. Granting this fact, however, we must admit that one sees many unstable neurotic, delinquent children, for whom some term must be used. With these qualifications we may discuss the socalled psychopathic child. In the course of discussion it may be possible to define his symptoms in such a way that the term psychopathic will be used only when it applies.

One sees many different kinds of children in this socalled psychopathic group. In New York city last year, over a thousand children were taken to the children's courts charged with varying delinquencies. These children might perhaps all be called psychopathic, but they fall into several different groups, and so this somewhat too comprehensive term may be restricted.

*Read before the American Association for the Study of the Feebleminded, June 2, 1924. Washington, D. C.

To begin with, we must place the mentally defective in a separate group. Mentally defective children of course may show emotional instability as well, but in any case the mentally defective children should be classified in a separate group, possibly with specially descriptive terms for those who have emotional instability.

The second group which may be separated from the others are children with nervous symptoms. They form a large percentage of the socalled psychopathic group. Thanks to studies during recent years, we can recognize these nervous cases quite definitely. They are unstable emotionally, they are subject to outbursts of temper, they sleep poorly, they have fears, and a certain number of them have compulsions and phobias. As a result of this emotional instability they have a number of accompanying physical symptoms familiar to everyone, such as nail biting, twitching of the face, overactivity, batting of the eyes, stammering, and other symptoms.

Now these and many others are all symptoms with which we are familiar. With adults the condition is termed a psychoneurosis. These symptoms in children are one and the same thing, but it seems best to speak of them as nervous children, rather than psychoneurotics, as the latter term seems a rather serious term with which to label a child.

The causes of these nervous conditions are now quite well understood. From the psychological viewpoint they are the result of failure in school, troubles at home, bad environment; and from the physical point of view they may follow injuries, diseases, and poor health.

These nervous children are likely to become psychopathic; i. e., to show varying degrees of delinquency and disorders of conduct, and so, while

they are frequently seen in clinics and are regarded as psychopathic children, it must be remembered that they belong to a well defined group of nervous children and are psychopathic only secondarily.

Another type of child which should not be termed psychopathic at all, but often is so designated, is the dull child; he who, by intelligence tests, has a rating of between eighty or ninety or thereabouts. Such a child is seldom properly classified in school. He comes in for more or less discipline and punishment and he is apt to be a failure. It is easy to see how such a child becomes unstable. Many of the socalled problem cases are of this dull group, and the problem would be solved if there was some special provision for them in the school. In any case a fair number of them become delinquent but the difficulty with them is not a psychopathic state, but dull intelligence.

Other groups may be considered from the physical viewpoint. These are the glandular or endocrine cases. Dismissing all extravagant talk about the relationship between glands and personality, the fact remains that a certain percentage of children show endocrine disorders accompanied by mental instability of one type or another. For example, the child with pituitary disorders, who is greatly overweight, with infantile sex organs and with body contour of the female type, is not infrequently backward mentally. Again, the very tall child, with thin tapering fingers and narrow pelvis and with evidences of glandular imbalance in which the thymus gland is involved, is not only inferior physically but may be neurotic, and possibly backward in mental development. Conditions where there is lack of energy and with low blood pressure are associated with inactivity of the suprarenal glands. Other more familiar types, such as thyroid disturbances, are well known. These glandular cases are all handicapped in one way or another. Besides physical disabilities they have mental disabilities too, and are likely to be termed psychopathic.

In the physical sphere, aside from the glandular cases, there are of course, those who have physical defects. In New York city one sees a fair number of subjects who have had head injuries from accidents. Emotional instability of many months' duration may follow such an accident. Cases following meningitis as well as scarlet fever or measles, often present nervous symptoms for some months, such as restlessness, stuttering and enuresis.

The nervous instability following lethargic encephalitis in children is now well recognized. These superficially appear like psychopathic children, but of course the condition is the result of the disease.

Another group found among these socalled psychopathic cases are children who seem practically normal in every way as far as their intelligence and their nervous stability are concerned, but who have been subjected to an unfavorable environment for years, so that they have become quite abnormal mentally in many respects. If we are to call them psychopathic we must realize that the condition is not inherent and that it may be remedied.

Relatives and teachers sometimes ask if nervous symptoms and delinquency are early signs of insanity. Insanity does occasionally occur in children, but it is very rare and it is not possible to recognize symptoms of beginning insanity under the age of twelve as a rule, and so we can generally reassure parents in this respect.

Convulsions and certain mild forms of epilepsy are frequent in the general population, as shown by census reports. This condition is often unrecognized during childhood. The child may be called psychopathic when in reality he is suffering from epilepsy.

From what has been said and much more that might be said, it should be clear that the term psychopathic should be used very guardedly. Scientifically, the following types cannot be called primarily psychopathic, although they may have psychopathic symptoms: 1. Mental defectives. 2. Nervous children. 3. Endocrine cases. 4. Children with dull intelligence. 5. Children mentally unstable, resulting from physical defects. 6. Cases resulting from poor environment.

If we are to use the term psychopathic, therefore, as applied to children, we must realize that we are not talking about the same condition as psychiatrists mean when they speak of a psychopathic state in an adult. Possibly these nervous conditions and bad environmental conditions and physical defects, handicap the developing child in such a way that he may indeed become psychopathic in later years. Certainly those who have had experience in schools and clinics see young people to whom such a term is applicable. One suggestion would be, therefore, to use the term psychopathic as applicable only to adolescents and adults, and not children, using a more descriptive term for the latter.

In any case, it is interesting to see the soil from which the adult psychopaths may develop. They develop from conditions which are recognizable during childhood and possibly avoidable. One of the conditions may be low intelligence, for example, although this is not the rule since many people with low intelligence are not at all psychopathic. Nervous instability, bad environment, inappropriate education during childhood, are factors, as are numerous other mental and physical causes, as has been indicated.

In any case, it should be quite evident that a very complete survey is necessary in order to recognize these prepsychopathic states, if such a term may be used. This examination should include a thorough physical survey, not only in respect to physical defects but also body growth and endocrine status. The entire psychology of the child should be investigated in respect to his emotional control, his intelligence, environmental and family influences, and his school status. Preventive measures may be very effective at this time of life if the underlying causes of the difficulty are recognized.

In concluding, it may be stated again that we should be quite careful in the use of this term psychopathic. Before the age of twelve, children are easily moulded, dependent upon the influences which are brought to bear upon them. While certain mental traits, of course, may be inherited, even these may be greatly modified and the child may be guided in such a way as to overcome undesirable qualities. Any diagnosis, therefore, which carries with it an unfavorable prognosis, should be avoided. Teachers, physicians, and parents, if they are to accomplish results with these particular children, must appreciate the fact that the problems of each may be solved

through scientific understanding. It must be appreciated that what has been termed human nature can be greatly modified by a number of influences, and that facts have been accumulated in the study of the psychology of children during the past two decades which have pointed the direction for preventive measures in the future. Often the solution of the problem lies with the school, and fortunately, schools can be found today, both private and public, where the unstable child receives understanding and scientific attention.

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Encephalitic Features of the 1921-22 Epidemic Influenza*

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Certain peculiarities noticed in the course of the influenza epidemic which appeared recently in Milan and elsewhere, induced someone to express a doubt as to its identity with common influenza. Yet, as this disease is recognizable only through clinical and epidemiological characters which are prone to vary according to the place, season and individual substratum wherein the disease originates and develops, I think a doubt is not consistent which is grounded only on symptomatological differences referable to the natural polymorphism of the epidemic.

During the recent epidemic influenza's classical symptoms were present, namely, acute rhinopharyngeal catarrh, with or without conjunctivitis, headache, high fever for one to three days, followed by a severe asthenia wholly disproportionate to the degree and duration of the infectious attack. Frequently there was tracheolaryngitis characterized by local itching, hoarseness and dry, spasmodic cough; also frequently gastrointestinal troubles, such as anorexia, dyspepsia, and constipation. But I have seen many other cases in which the catarrhal phenomena of the upper air passages were absent or trifling, while, on the contrary, the general phenomena were very pronounced, such as fever, malaise, prostration and so on (simple influenzal fever, typhoid influenza). In these cases the fever was quite different in character and lasted from one to eight days, sometimes longer; the average temperature was about 38° C. Some cases began with moderate fever, which went higher and higher until it reached 40° C., as in the first week of a regular typhus, and afterwards it dropped quickly to apyrexia.

Other cases ran an inverse course, beginning with high fever and coming to apyrexia through lower and lower temperatures. The tendency to relapse was very noticeable, especially in these latter cases which presented no catarrhal phenomena. The relapse generally occurred two or three days after the end of the first attack, appearing almost as a second phase of the sickness.

These varying manifestations of influenza, however, are neither strange nor unusual, since they were already observed and described during the European epidemic of the years 1889-90, and were again noticed during the great pandemic of 1917-20. As for the bronchopneumonic and pleuritic complications, their character and frequency were proportionate to the importance of the present epidemic, which is, in many respects, comparable to that of 1890.

Most noticeable were the neuroencephalitic forms of the disease, not only on account of their clinical interest, but also because of their identity with the manifestations of the disease during the epidemic of 1918-20, which had brought out the idea of a new and uncommon disease—encephalitis lethargica.

I shall not speak of the numerous neuralgic forms, especially of the trigeminus and cervical plexus, which only indicate, through their frequency, the neurotropic character of the present influenzal virus, and forms, as it were, an epidemic frame wherein the profound and complex nervous localizations are settled. I remember that the monosymptomatic sobbing lately reappeared in many places of our province. It was so strictly connected with the epidemic that its influenzal genesis could not be denied.

I have observed several cases recently which presented a cerebral symptomatology closely resembling epidemic encephalitis.[1]

In these cases we had to do with typical encephalitic types, not very severe (a single case came afterwards to death). Their identity with those we have observed since 1918 is complete under all circumstances. Moreover, I was informed by several colleagues that other cases like these were meantime noticed in Milan and in its province during the late influenzal epidemic.

Such cases as these which I encountered demonstrated clearly the intimate relationship existing between influenza and epidemic encephalitis which must rightly be considered as a form of influenzal encephalitis. The fact that in epidemic encephalitis a foregoing phase of catarrhal influenza is not always recognizable, cannot weaken the evidence of all the other manifestations, and can, in addition, be easily explained with what we know about the manifold clinical features of influenza and especially about its primary noncatarrhal forms. Perhaps the insufficiency or the lack of topical and general reaction phenomena is rather favorable toward the localization of the influenzal virus in the nervous system.

This reappearance of the well known encephalitic forms in the present epidemic, indicates the historical continuance of the conception according to which encephalitis lethargica or epidemica is but a nosographical contemporary feature of what was formerly called nervous influenza. In connection herewith a publication of Dr. Kayser-Petersen, of Frankfurt (2) is noteworthy which, although later than the Italian authors, such as Monti, Bignami, Tarozzi, Modena, etc., aids in clearing the question of the identity between nervous influenza and encephalitis epidemica.

*From a paper read at the Soc. Lomb. di Scienze medicobiologiche, March 10, 1922.

[1]The histories of these cases will be included in the author's reprints. They have been omitted for lack of space.

Symposium on Endocrinology

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, AUGUST 20, 1924

The Islets of Langerhans and the Functions of the Pancreas

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INTRODUCTION

The cell islets first described by Langerhans (16) in 1869 began to attract attention after the discovery by von Mering and Minkowski (20) that extirpation of the pancreas in animals gives rise to a condition which is in many cases indistinguishable from diabetes in the human subject. With the growth of the doctrine of internal secretion as applied to many organs of the body it was inevitable that the islets should be credited with the function of internal secretion, as they possess no ducts leading to the exterior and the function of the rest of the pancreas was well understood. In 1895 Schäfer (30a) suggested that the islets furnish some internal secretion possessing the power of maintaining the carbohydrate balance of the blood, and in his monograph (30b) published in 1916 the same author remarked that "Provisionally it will be convenient to refer to this hypothetical autacoid as *insuline*." Since then there has been an increasing tendency to regard the islets as organs *sui generis*, totally separate and distinct from the zymogenous tubules of the pancreas, and carrying out the internally secreting function of the pancreas. It may be found that the islet tissue is in fact endowed with the power of internal secretion, but as we shall see there is yet no proof of this, and it seems clear that the structures in question are not essentially different in origin or fundamental structure from the externally secreting acini.

HISTORY

There is no need to record the history of the subject in any detail. This has been done on several occasions and reference to the bibliography accompanying this article will enable the reader to obtain a fairly complete story of the subject.

Writers may be divided into two chief groups according to their views as to the morphological significance of the islets. The first of these includes those who believe that the islets are essentially of the same embryological and morphological nature as the zymogenous tubules and are not to be looked upon as in any sense organs *sui generis*. The second group of observers is constituted by those who regard the structures in question as definite and distinct organs, analogous to the cortex of the adrenal body, the epithelial part of the pituitary, and the parathyroids, and consider that they have no connection (except perhaps a community of embryonic origin) with the secreting tubules of the pancreas.

Kohn (11) classifies the islets as one of his *"Drüsen ohne Ausführungsgang—ohne Drüsenlumen"* (*"corpora glanduliformia"*) along with the parathyroids, epithelial pituitary, and the adrenal cortex. Some among the older workers in the first group even considered that there may be no difference in *function* between the islets and the rest of the pancreas. Thus Harris and Gow (8) thought that the islets might take part in the external secretion, probably forming one of the ferments. Jarotzky (10) believed that they may take part both in an internal and an external secretion. Lewaschen (17) and Pischinger (25) looked upon the islets as exhausted secreting cavities, and thought that after a period of repose they may again take on their secretory function. Tschassowinkow (33) and Dogiel (5) on the contrary have expressed the opinion that the islets are exhausted acini which are unable to return to their former state of activity. Statkewitsch (32) looks upon islets as alveoli modified by inanition, and Mankowsky (19) emphasizes the intimate relation subsisting between islets and tubules, their functional variations and forms of transition.

In most vertebrates there are no lumina in the islets of Langerhans. But Gianelli and Giacomini (7) described lumina in the reptilian islets and their existence has been confirmed by Laguesse (12) and others. The last named observer refuses to admit that the islets are simply masses of exhausted acini, and thinks that they are temporarily modified for the purpose of supplying an internal secretion.

The authors belonging to the second chief group all believe in the "internal secretion" theory of the islets, and indeed so convinced are many of them that this is the true theory, that they refuse to admit the occurrence of changes in the islet in exhaustion and inanition and the transition forms from one kind of tissue to the other. The chief upholders of this

"separate organ" view of the islets are Diamare (4), Rennie (28) and Helly (9) among comparative anatomists and Ssobolen (31), Opie (24), Weichselbaum (39) and others among pathologists.

Rennie (28) in his work upon teleostean fishes, describes the fairly constant occurrence of an encapsulated islet ("principal islet") of large size, whose relation to the main part of the pancreatic seems to be slight. He considers the islets to be "blood glands which have entered into a secondary relation to the pancreas" and finds no transitional forms.

MORE RECENT INVESTIGATIONS

In the year 1904 Dale (3) reported that an increase in the amount of islet tissue may be induced by exhausting the pancreas by means of secretion. This announcement induced the present writer in conjunction with Mrs. F. D. Thompson (34, 35) to investigate the comparative anatomy and physiology of the islets in different classes of animals. Our studies included an investigation into the normal structure of the pancreas in the following animals:

Mammals.—Dog, cat, badger, ox, rabbit, guinea-pig, chipmunk, mouse, bat.

Birds.—Pigeon, duck, sparrow.

Reptiles.—Chrysemys picta, kinosternon pennsylvanicum.

Amphibians.—Rana temporaria (esculenta?), Plethodon glutinosus.

Fishes.—Teleostei, Amiurus vulgaris, A. nigricans, Catostomus teres, Hyodon alosoides, Stizostedium vitreum, S. canadense, Moxostoma aureolum, Esox lucius.

Ganoidei.—Acipenser rubicundus, Amia calva

We found that in all the chief groups of vertebrates the islets frequently show distinct traces of an alveolar arrangement. The solid columns composing the islet often show, for example, a double row of nuclei corresponding to the position of the nuclei in the secreting tubules. The islet columns are frequently in complete anatomical continuity with the surrounding zymogenous tubules and all kinds of transition forms are common throughout vertebrates. In reptiles and fishes a distinct lumen within the islet area can sometimes be detected.

In two further communications (36, 37) the results of an examination of the following species were given:

Reptiles.—Testuolo tabulata, Lacerta viridis, Tropidonotas natrix, Coluber longissimus.

Elasmobranchs.—Scyllium canicula, Acanthices vulgaris, Mustelus laevis, Rhina squatina, Raja clavata, Raja circularis.

In the reptiles the islets are not always very striking and may consist of merely a few cells. Transition forms between islet and alveoli are fairly common and the former are frequently in close contiguity to the ducts, reminding one of the arrangement in the elasmobranchs.

In elasmobranchs the islets are sometimes of the mammalian type, sometimes more primitive and closely related to the ducts. For a fuller description (with colored illustrations) the reader is referred to our original paper (37).

The effects of inanition and administration of secretion will be referred to later.

Bensley (1) in 1911 published a paper on the structure of the pancreas. In this he states that he arrived at very different results from those of Vincent and Thompson. Bensley's work was very painstaking and his conclusions seem to have been very generally accepted, with the result that the majority of authors who have no first hand information on the subject believe in the "separate organ" theory of the islets.

A communication by Lane (15) had appeared in the year 1907. In this special attention was called to two different kinds of cells within the islet. These had been noticed by previous observers, but Lane laid special stress on certain "specific" granules occurring in each kind of cell, which, he thought, enabled him to distinguish not only each of these kinds of cells from the other, but both kinds from zymogenous tissue.

Since the appearance of Bensley's communication Laguesse (13, 14) and Saguchi (29) and others from the standpoint of comparative anatomy have strongly supported the views put forward by Mrs. Thompson and myself.

STRUCTURE OF THE ISLETS

Some years ago I carried out (in conjunction with J. P. Parsons) an investigation on the islets of Langerhans using the histological methods of Lane and Bensley, and saw no reasons for changing my views. Bensley's communication contained the results of so much painstaking investigation carried out by methods which differed in many respects from those employed by Vincent and Thompson, that at the outset we were impressed with the possibility that a renewed inquiry might compel us to agree with his conclusions. But the sequel has proved the contrary. I am now more than ever convinced that Bensley did not arrive at the correct result.

The important points to be discussed are: 1, The anatomical relationship between islet and acinus; 2. the specific nature of the islet cell (and its contents).

The question as to continuity between islet and zymogenous tubules need hardly be discussed, since Bensley admits that such may and frequently does exist. It has been shown by Vincent and Thompson to be a common occurrence in the lower vertebrates. A trace of a lumen in the islet tissue is also frequently to be found.

But Bensley, and others who agree with him, insist that the islet cells constitute a double histological entity, and that each of the two kinds of islet cell is distinguished from the zymogenous cells by absolutely characteristic cytological features, that is to say, by the possession of specific granules reacting to particular stains. In other words, although the zymogenous tubules may appear to run into the islet tissue, there is in reality a sudden change when we pass from a zymogenous cell to an islet cell; since the latter contains none of the specific contents of the former and possesses for its part specific granules peculiar to itself.

On the question of continuity between acini and islets Bensley's attitude is not consistent. On p. 352 of his paper he says: "The examination of preparations . . . shows that the apparent continuity between islets and acini or ducts is real," but on p. 376 occurs a passage which seems to indicate that

he thinks that this apparent continuity is due to the shape of the islet and the direction of the section.

The author in question lays great stress upon the existence of absolutely specific granules in the islet cells, and would not admit the claim of any cell to rank as an islet cell unless it contain such granules. I am of opinion that the specific nature of the A and B granules has not been proved. Using the Lane B method with material from the guineapig it may be admitted that the histological picture corresponds fairly well with what Lane and Bensley describe; the B cells appear violet due to the presence of violet stained granules, and the A cells are faintly colored with the orange G. Employing Lane's method for the A cells, it is not always easy to mark their limits, and their nuclei do not appear to differ in shape from those of the B cells. Moreover, the A and B cells do not come out as clearly as one would expect after reading the descriptions of Lane and Bensley. Sometimes it is even difficult to say whether a particular deeply stained cell is to be put in the A or in the B category; the tint is sometimes brownish mixed with violet or vice versa. In many cases only part of the cell is stained, in other cases one part of the cell stains more deeply than another. Thus the A cells (Lane's method) may be deep violet in one part and the color may fade away so that the other end of the cell resembles in tint the almost unstained surrounding B cells. It is thus by no means clear that we have to deal with two different types of cell. It seems possible that there are various stages of activity revealed by differences in staining reaction.

I am convinced that the acinous cells contain granules which give staining reactions very similar to those of some of the B cells of the islet, and if Bensley's acid fuchsin-methyl green method be employed, we find scattered throughout the pancreas certain zymogenous cells which come out a deep red while others are green.

Bensley insists, that, in order to prove the existence of true transitions between acinous and islet cells, some cells must be shown to contain both zymogenous granules (or other specific granules belonging to the acinous cells) and specific islet granules. He discusses at some length the significance of the socalled Mankowski granules in the zymogenous cells and comes to the conclusion that these are something quite different from the specific islet granules. In this he may be correct, but I believe that I have seen certain granules within the cells of the zymogenous tubules which are at any rate not very different in regard to size and staining reaction from some of those found in certain islet cells.

Further, it cannot be allowed that the criterion for "transition" above referred to, should be insisted upon. We can conceive that a real transition between the two kinds of cells might manifest itself in a somewhat different way. The number of zymogenous granules in the acinous cells might become gradually reduced as one approaches the edge of an islet, until at a certain point the cells are found to contain no such granules. Careful examination of these might then reveal the presence of granules which are stained by the "specific" reagents for islet tissue. Thus, there might be a certain degree of suddenness in the occurrence of the specific granules, though the total change might reasonably be regarded as a real transition from one tissue to the other. This seems all the more plausible in view of the anatomical continuity which is admitted to occur in some cases. On the other hand it may be noted that the islets of Langerhans are surrounded at a little distance by a zone of zymogenous tissue which stains more deeply than the rest of the gland. This observation is very suggestive of the possibility that the islets may, after all, have some function in relation to the zymogenous function of the pancreas.

Vincent and Thompson studied the effects of inanition in the dog, cat, pigeon, and frog, and reported that in these animals the effect is markedly to increase the amount of islet tissue at the expense of the zymogenous. These results, so far as concerns the bird, were confirmed by Laguesse. More recently Parsons and myself carried out inanition experiments upon the rat, gopher, guineapig and hen, and repeated the experiments upon the cat and the frog. The results were entirely confirmatory of those of Vincent and Thompson. Bensley working with the guineapig, has been unable to observe any increase in islets after inanition, and offers some criticism of the work of Vincent and Thompson. One obvious criticism of this work has recently occurred to me, though it has escaped Bensley's notice. Even assuming that the islet tissue be unaltered in amount, since the whole pancreas shrinks during inanition, there will be an apparent proportionate increase in the amount of islet tissue in any given portion of the gland. In the majority of animals the pancreas shrinks to about half its original bulk after ten or twelve days' inanition; so that in order to justify the statement that the islet tissue is actually increased in amount the apparent increase should make the islets more than double their original size. In the majority of instances we have found this to be actually the case.

Bensley objects that by the method of calculation employed, the increase in islet tissue which Vincent and Thompson thought they observed, was possibly accounted for by the normal variation which occurs. If this were the case, it might surely happen in many instances that the mistake might be in the opposite direction, and that the impression gained by looking over a parallel series of slides (of normal and inanition preparations respectively) might be that the islet tissue is frequently reduced by inanition. This we never observed. In the more recent experiments we have used the planimeter and have ascertained by this means the limits of normal variation as well as the amount of increase after a period of inanition.

So far as I can ascertain, Bensley does not appear to have reckoned with the *amount* of islet tissue under any conditions. By his neutral red method he has counted, it is true, the *number* of islets under varying conditions and states that this number is fairly constant. Now the important point is the actual amount of islet tissue, irrespective of the number of islets which make it up. Three or four large islets might easily represent a vast increase in islet tissue over a score of small ones. We imagine, indeed, that what happens in the majority of cases is that the very small islets consisting only of a few cells are increased enormously during inanition. Bensley's method was incapable of revealing such a change.

The following may be taken as an example of the result of a careful estimate of the actual variation under normal conditions in the amount of islet tissue in the pancreas of the hen. Slides of mounted serial sections were taken at random and the area of islet tissue was measured in three or four sections in different parts of each slide. The material was taken from different parts of the gland. Fifty fields were examined. The area varied from 0.035 units to 0.580 units. The average area amounted to 0.346 units.

In the pancreas of a hen after twelve days' inanition the area of islet tissue varied from 0.230 units to 1.590 units. The average amounted to 0.822 units. Thus, in the inanition pancreas there was 3.34 times as much islet tissue as in the normal.

EFFECTS OF OTHER CHANGES OF CONDITIONS ON THE AMOUNT OF ISLET TISSUE

In rats a pure carbohydrate diet markedly increases the amount of islet tissue, while a pure protein diet either leaves the amount at the normal level, or even somewhat diminishes it.

Extirpation of the spleen increases the amount of islet tissue in the pancreas of the frog (confirmatory of Fischer) (6).

There is no need to refer specifically to the older work referring to changes in the islets in diabetes. The condition which was usually described was a hyaline degeneration, and the belief in this doctrine has become so widespread that it has now become orthodox to regard diabetes as a disease of the islets of Langerhans. But not a few among the pathologists in different countries have grown dissatisfied with the evidence. Thus Reitmann (26), Oertel (22) and Milne and Peters (21) have described hyaline changes in nondiabetics and even in normal animals. A recent summary of the evidence will be found in an article by Oertel (23).

EXPERIMENTS ON LIGATURE OF THE PANCREATIC DUCTS

One of the strongest supports in favor of the "separate organ" theory of the islets has been based on the effect of ligature of the pancreatic duct. It has been alleged that the operation gives rise to an atrophy of the zymogenous tubules of the pancreas, while the islets remain unchanged and no diabetes occurs. When, however, the remaining tissue consisting only of islets is extirpated diabetes ensues. The statements of different observers have, however, been very contradictory.

Milne and Peters (21) report that in the atrophy of the pancreas which follows ligature of the duct some of the islets may remain unchanged, but for the most part the islets atrophy along with the adjacent acini or else they take on appearances indistinguishable from the atrophying acini. The great majority of the structures which persist after ligature of the pancreas are really the remains of the atrophied acinous pancreatic tissue, and "collectively represent a sufficient amount of pancreas tissue to prevent diabetes."

Milne and Peters point out that perhaps the most convincing demonstration of the relative importance of the acini and islets is found in animals where the pancreas has been incompletely removed. In dogs a very minute fragment, maybe no larger than a pea, if allowed to remain, prevents diabetes. This fragment undergoes great hypertrophy. The acini become very large, and as a rule become less granular. The islets do not, however, become more numerous or larger, and in many cases no islets can be found.

But it is necessary to remind investigators that even if the islets persisted when the rest of the pancreas atropied after tying the ducts; and even if the islets were found to be more numerous after partial pancreatectomy, these facts would not prove that the islets were separate and distinct organs concerned with sugar metabolism. They would rather point to the possibility that the islets are an integral part of the pancreatic apparatus, possibly undifferentiated gland tissue, and their hypertrophy if it occurred would be an attempt to rebuild new tissue to replace that which had been removed or had atrophied.

THE ISLETS IN FISH

Rennie as we have seen (27) in 1904 gave a description of the islets of Langerhans in teleostean fishes.

Vincent and Thompson (35) examined species very different from those studied by Rennie. The last named observer investigated marine forms while Vincent and Thompson confined their attention to lake and river species. In some species it was easy to observe masses of separate islet tissue, corresponding to Rennie's "principal islet." Rennie was under the impression that in elasmobranchs the islets are wanting, though on this point he seems to have made no personal observations. As we have seen there is no difficulty in finding the islets in elasmobranchs. It was thought by Rennie that in many species the pancreas itself is free from islets; that is to say, there is a complete separation of the two kinds of tissue. In none of the species examined by Vincent and Thompson was this found to be the case. It cannot be admitted that the occurrence of patches of islet outside the limits of the pancreas carries the significance which is attached to it by Rennie and many subsequent authors. The fact that the teleostean islets are so often encapsulated loses much of its importance when it is pointed out that isolated portions of the zymogenous tissue are also frequently encapsuled.

More recent authors have been somewhat confused on the subject of the pancreas in fishes. Thus Cowdry (2) says: "It is interesting to note that in fishes the island tissue is condensed into a single large mass, quite unconnected with acinus tissue (Rennie)." Now it is only in Teleosts that such an impression might have been obtained, and even here the impression is false. Islet is always accompanied by some acinous tissue, and acinous tissue always contains some islets.

Macleod (18) has reported that no insulin could be prepared from the pancreatic tissue proper (zymogenous or acinous) of the "representative" bony fishes Lophius, Myoxocephalus, and Zoarces although a potent preparation could be obtained from the principal islets. Then he rather timidly concludes: "Although the anatomical relationships of these tissues are still somewhat obscure, the above results afford strong direct evidence for the hypothesis that insulin, as its name implies, is derived from the insular and not the zymogenous tissue of the pancreas." Now, if the principal islet really consists of nothing but islet tissue and if the pancreatic

tissue contains no islets, then it ought to have been possible to declare from Macleod's results that insulin is obtainable only from islets, but unfortunately the "islets" in Teleosts always, in my experience, contain some zymogenous tissue and the zymogenous tissue some islets. Possibly Macleod's hesitancy was due to his having studied the drawings in the paper by Vincent and Thompson where the first part of this proposition is clearly demonstrated.

But there is now a much stronger reason for doubting the value of Macleod's results upon fishes. It is doubtful how far insulin is specific even for pancreas, as it has recently been prepared from a large number of animal and vegetable tissues. The probability that such might be the case occurred to the present writer at the time that the discovery of "insulin" was announced. At my suggestion E. C. Dodds and F. Dickens (see 38) have applied their method to the submaxillary gland of the ox and have found that this organ yields 710 original Toronto rabbit units per kilo of gland. It is not easy to make any very strict comparisons as to the relative amount of potent material which may be prepared from different tissues, and this will not be possible till the chemical nature of insulin has been discovered. It is, however, clear that other glandular tissues will yield insulin in amounts comparable with that obtainable from the pancreas. It is now being suggested that insulin is manufactured in the pancreas and distributed to other tissues. Or that it is manufactured in other tissues and stored in the pancreas. Such hypotheses are of little avail in the present state of our knowledge. Nor can we state what is the relation between the fact discovered by Mering and Minkowski that extirpation of the pancreas produces diabetes, and the other fact, that a pharmacodynamically active substance capable of reducing the blood sugar in animals is widely distributed in animal and vegetable tissues.

The author's references will appear in his reprints.

Differential Diagnosis of Diseases of the Thyroid Gland

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In presenting this paper I wish especially to call attention to the few diseases and collections of symptoms that may be confounded with the diseases of the thyroid gland. Few would mistake the macroscopically large thyroid with symptoms of tachycardia, extreme irritability, tremor and exophthalmos for anything but a Graves's disease, but it must not be forgotten that diseases of the thyroid range in severity from a normal appearing gland with slight symptomatology to the exophthalmic type.

The parenchymatous goitre of adolescent girls seen in locations where goitre is endemic is in a percentage of cases a benign enlargement that disappears in early adult life, leaving as far as is possible to tell no signs of its former existence, but in these same regions a considerable fullness of the neck is so common in young female adolescents as to elicit no interest even when there begins to appear some of the definite early signs of thyrotoxicosis that come with the change from the parenchymatous type to the colloidal type. These early symptoms may be difficult of differentiating from a neurosis, inasmuch as both have some irritability as to the main symptoms with attendant excitability and tachycardia. The thyroid gland itself may be smooth, retain its shape and not be appreciably noticeable. The use of an apparatus to test the metabolism, while sometimes valuable, may often tell us but little in such cases, as a short rest in bed will quiet the individual enough so that a normal metabolism only may be noted. The Goetsch test of the injection of adrenalin is an aid, but not infallible. The best and surest aid seems to be the pulse. In a neurosis, the heart rate will vary day and night, dropping during sleep and increasing in the daytime when the individual may work herself into a state of excitement. The heart rate in diseases of the thyroid, however, does not change much, but runs along as rapidly at night as in the daytime and it demands much rest of the constitution and of the thyroid before it can be brought to normal. In those types where the etiology is definitely a deficiency of iodine ingestion the therapeutic test of giving iodine or thyroid extract may clear up the diagnosis. Small amounts of iodine, or of the extract of thyroid, called thyroxin, will reduce the size of the gland and quiet the irritability and excitability in a period of three or four weeks. Personally, I use sodium iodine in grain doses, but the iodostorine of Roche is nice to use and the thyroxin in small doses is very powerful. Dr. Englebach asserts that of all of the endocrine extracts the only one not destroyed in the stomach by its secretions is the extract of the thyroid. All others must be given hypodermically.

When the colloid of the gland begins to degenerate its smoothness and shapeliness change, for the degeneration often does not take place with any degree of equality. On one side a lump may develop that causes unsightliness or lateral pressure on the trachea or any of the other forms may appear with which we are all familiar.

Dispersed throughout the gland at this time there may develop small adenomatous areas that are noticed and felt as hard lumps. These when carefully palpated can be felt from as small as a pea in size, upward, and may or may not have developed from a diffuse adenomatosis such as has been described, but not distinguished from a parenchymatous goitre. When the gland reaches this size the absorbability of the colloid in the gland may be increased and the symptoms, if there are any, may be modified somewhat for the better by the use of iodine or thyroid extract, but the results are not perfect, and only temporary. The production of more ade-

nomatous tissue is not stopped by this medication and after a period of time that may be days, weeks or years and during which time there is always some deviation from the normal in the amount of the thyroxin thrown into the blood stream, a definite damage to the heart, kidneys and liver occurs, and often later this enlarged gland that has only been slightly harmful for a long time suddenly changes to a very definitely damaging thing that sends the pulse up anywhere from 120 to a rapidity that cannot be counted. It enlarges the heart, raises havoc with the nervous system and increases the metabolism to a point where the individual uses up his tissues far faster than he can make them. Why an almost innocuous gland should change as quickly as it often does to one capable of doing such an amount of damage has never been satisfactorily explained. The answer probably lies in some unusual burden put upon the entire system at this time, such as fatigue or an acute infection, perhaps from the tonsils and teeth, or more probably from the intestinal tract. Though cleaning up all of these sources of infection at this late date has little curative power, it should be done on general principles.

The thyrotoxic heart is an early symptom of the disease that was often considered in the past as an entity and not in relation to the thyroid, and even today a small gland moderately toxic is often overlooked as the cause of heart disturbance, and the heart treated independently of it, not as secondary to the goitre.

Coincident with a small toxic gland there may be infected tonsils or decaying teeth, which are often considered as sources of the trouble of the malfunctioning heart and indeed it is often most difficult in some cases to draw a definite line and say that the thyroid is entirely at fault when we know that infections are so commonly the cause of a bad heart. If there is some connection between an infection and the toxic thyroid then this focus would affect both the heart and the gland, with the latter superimposing its toxicity upon that caused by the infection as such. In such cases there is an irritable heart out of all proportion to what we might reasonably expect from a small focus of infection alone, or the thyroid, if but moderately toxic. There is no empirical answer to this. The thyroid if severely toxic will do much permanent damage in a short time and it is advisable not to procrastinate in these cases, but at once to eliminate the gland. In moderately toxic, or, better still in mildly toxic cases, it may be safe to delay long enough to treat the infection first.

However, where there is no definite infection and still some tachycardia with palpitation there seems little excuse for overlooking the thyroid even in the absence of a great enlargement.

It is an important, distinguishing point to note that there is seldom ever a faulty heart due to thyrotoxicosis that does not have with it other symptoms of the disease. I have not seen such a heart that did not have associated with it some irritability and hypersensitiveness.

The diagnosis of a physiological enlargement of the thyroid during pregnancy from a toxic or potentially dangerous goitre is of great interest to every accoucheur. Many women have some slight enlargement of the gland during pregnancy that disappears after parturition, not to be heard of again until the next pregnancy, or not even then, perhaps. There may be even present some signs of toxicity developing that are not troublesome or dangerous and act only as a slight added strain to the burdens of childbearing. On the other hand quite a different condition exists at times with the goitre at time of pregnancy. The disturbed imbalance of the secretions of the ductless glands manifests itself in an acute flaring up of all of the terrific symptoms of toxic goitre.

The future mother becomes alarmed, worried about herself and her child, restless and sleepless. The heart hurries, many times gastrointestinal symptoms are acute with diarrhea, and without doubt the entire system is being dealt a blow from which it can only partially recover at best. It is a fine point in diagnosis to decide at an early date whether we have a thyroid gland that is going to remain relatively quiescent during pregnancy or whether the gland will increase its activity to the danger point. Medical treatment is difficult under the most favorable circumstances. When we find the gland is becoming more toxic in early pregnancy, I believe that the gland should be removed at the earliest date to enable the mother to carry the child to term, for otherwise the child would be lost at a later date, perhaps, and the mother's health irreparably damaged. Later in pregnancy, Crotti is recommending that Cesarean section be done first. This gives the child a chance for life and does not subject the mother to the rigors of parturition. The mother is given a physiological rest, enabling her to recover enough to have the gland more safely removed at a later date. The procedure seems logical, perhaps. I have removed the gland early in pregnancy when toxic with most happy results, but have not seen such a case in which I felt justified in recommending Cesarean section. It is a peculiar fact that only very seldom does a woman suffering with Graves disease become pregnant. Peterson, who has seen many thousands of deliveries, has only two pregnancies in his vast experience occurring in the presence of the disease. The reason may be disturbed ovarian function, but to my mind the answer is to be sought in the higher metabolic rate. The cells attempting to keep a foothold inside the uterus may be poisoned by the thyrotoxicosis or it may be that the nutrition is as poor as it is for the other tissues, and the fetal cells die of starvation. This does not of course apply to enlargements of the thyroid without toxicity or goitre developing toxicity during pregnancy.

The enlargement of the neck is not pathognomonic of goitre. There are conditions that may show enlargement here or may cause pressure symptoms on the trachea in the mediastinum, as tumors of the thymus, malignancy of the mediastinum, and aneurysm of the aorta. All these may give the same choking sensations that come with intrathoracic goitre. The fluoroscope is often of great help in the diagnosis of goitre in the mediastinum both by showing the shape of the gland and by demonstrating the up and down movement of it in connection with

movements of the trachea. Only when the gland is extremely large or very adherent do we fail to get these movements on deglutition. Conditions that simulate the goitre neck are also Hodgkins's disease, cysts and cellulitis.

CONCLUSIONS

In most cases the diagnosis of goitre does not present as difficult a problem as does the differentiation of type, difficulty of prognosis, and treatment after the diagnosis has been made.

Clinical Notes on the Selective Tissue Action of the Posterior Pituitary Gland*

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It is reasonable to assume that in the course of evolution the individual endocrine glands have undergone an adaptive change of function from the lower to the higher forms of life as stressed by Gaskell (19). We learn that the thyroid and pituitary glands at one stage in evolution emptied their secretion directly into the upper alimentary tract suggesting that these structures were fundamentally concerned with digestion, and as we go higher in the scale this secretion is emptied directly into the blood stream, thus affecting the foodstuffs secondarily. Gaskell (19) believes that the pituitary, the principal organ of excretion in some lower forms, is homologous with the coxal gland in the Limulus (crab). Such analogies strongly suggest that there is an intimate relationship between the endocrine and other tissues based upon their morphology and embryological relationships. If we follow these closely we can construct a system of endocrine and tissue relationships which is helpful in explaining many clinical phenomena.

Evidence is accumulating that certain tissues furnish substances which nourish and activate the functions of other cell groups. Crile (11) states, "In this interrelationship of the brain, the thyroid and the suprarenals, we have what, perhaps, is the master key to automatic action of the body, that is, through the special senses environmental stimuli reach the brain and cause it to liberate energy, which in turn activates certain other organs and tissues, among which are the thyroid and suprarenals. Many writers such as Glynn (21), Falta (17a), Bulloch and Sequeira (5) have noted that hyperfunctionating hypernephromata produce precocious sexuality in the young, thus demonstrating a close relationship between the suprarenal cortex and the sex glands.

The relationship of the pituitary to body growth is a well known clinical fact tending to support the view that certain tissues furnish substances which activate the function of other cell groups, Keith (31) believing, for example, that the anterior lobe of the pituitary renders osteoblasts hypersensitive to the various stresses which fall on the human skeleton during life.

Carrel (7) says "the presence, in embryonic tissue juices and in glandular and leucocytic extracts from adult animals, of principles increasing the rate of multiplication of fibroblasts and epithelial cells suggested the possibility that these substances are secreted by leucocytes and endocrine glands—as trephones are also present in the aqueous extracts of glandular and other tissues, it is permissible to suppose that endocrine glands, like leucocytes, may secrete nutrient substances for certain tissues, and not only hormones."

In a previous communication the evidence pointing to a selective action of the suprarenal cortex secretion on mesothelial tissues was discussed (35). The conclusions reached were as follows:

1. The suprarenal cortex secretion has a selective action on mesothelial tissues.
2. The normal development and continuous normal functioning of the sexual glands and skeletal muscular system is dependent upon the normal functioning of the suprarenal cortex.
3. Anterior cerebral defects include the pituitary gland, which in turn are accompanied by suprarenal cortex defects. That the mesenchyme and mesothelium are closely related was emphasized in the previous communication. Lewis (32) concluded that the mesothelium is to be considered not as a tissue differentiated from the mesenchyme, but merely as a change or transformation in form; and Clarke's (9) experiments tend to show that mesothelium can be formed from the mesenchyme, even in adult life.

The following discussion will present the clinical evidence tending to show the selective action of the posterior pituitary lobe secretion on mesenchymal tissues. It will be noted that the suprarenal cortex, as part of mesenchyme, is involved in pituitary disease and therefore, through the intermediary of the suprarenal cortex, the mesothelial tissues are involved as well.

From the mesenchyme are derived the following tissues: 1. Connective tissue, cutis, tendons, etc., cartilage, bone—bone marrows, dentine and cementine of teeth. 2. Lymph glands—lymphatic system. 3. Spleen. 4. Blood vessels. 5. Blood. 6. Fat cells. 7. Smooth muscle (mesenchymal portion of uterus). 8. Collecting tubules of kidney—capsule of Bowman. 9. Suprarenal cortex.

The involvement of the suprarenal cortex produces changes in the mesothelial tissues as has been reported, but for the sake of clearness these are given again: 1. Peritoneum. 2. Pleura. 3. Pericardium. 4. Urogenitals: a, Wolffian body, b, kidney (non-

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mesenchymal portion), c, ovary—testicle—prostate, etc, d, oviduct: A. Uterus (nonmesenchymal portion). B. Vagina. 5. Striated muscles: skeletal, cardiac.

Pituitary disease produces changes in the above named tissues, as I will attempt to show.

By posterior lobe secretion is meant the secretion obtained from the pars intermedia and the pars nervosa. All commercial preparations are prepared from both of these structures.

The clinical forms of pituitary diseases may roughly be divided into hypofunctioning and hyperfunctioning states. However, hypofunctioning may follow hyperfunctioning, such as is believed to be the case in acromegaly. It is evident that the age of onset, viz.: pre or post adolescent, has a great deal to do with the degree of changes found in these tissues; likewise, the degree of the pathological changes in the pituitary gland will influence the amount of tissue change.

I will first consider hypofunction of the pituitary gland. The tissues will be discussed in the order mentioned previously under mesenchyme. Hypofunction (Dystrophia adiposogenitalis, certain cases of obesity).

Connective tissue.—The texture of the connective tissue is delicate. The skin in the severer forms may be white and transparent like alabaster. Falta (17b) says "In dystrophia adiposogenitalis the skin shows a quite characteristic texture. It is often described as alabasterlike, is remarkably delicate and white, mostly is cool to the touch, and sometimes is dry and exfoliates readily."

Cartilage.—There is underdevelopment of the cartilage, as reported by so many authors (12). The larynx in the preadolescent variety remains small. The epiphyses fail to ossify and remain cartilaginous. Cases are reported of defects in membranous bones associated with dwarfism and diabetes insipidus (25).

Bone.—Beck (15a) says that one of the important functions of the pituitary is to stimulate connective tissue growth, especially that of bone, and involvement of the bones is a constant finding in hypofunction of the pituitary in the preadolescent stage. There is inhibition of ossification and defective skeletal development. In the later stages of the growing period, growth may suddenly become arrested and the infantile changes are permanent. In the severer forms of hypofunction, the appearance of the bone nuclei is delayed and the epiphyses remain ununited and so the long bones are underdeveloped.

Tendons.—The tendons are proportionate to the bone development and are, therefore, small.

Dentine and Cementine of Teeth.—Deciduous and permanent teeth are soft and crumbly, decay sets in very early and the dentine and cementine of the teeth are poorly developed or not all present. Ridging and hollowing are frequent.

Lymph glands.—The lymph glands are small and hypoplastic. The hypoplastic lymph glands are no doubt related to the hypoplasia of the whole hematopoietic system (bone, spleen, blood vessels, etc.)

Spleen.—The spleen is much smaller than normal, sharing in the general splanchnomicria (4-42).

Blood vessels.—Hypoplasia affecting the vascular coats is present. The aorta is small. The blood-pressure is low (16a).

Blood.—Falta (17c) says "Almost regularly in hypophysealdystrophy are found alterations of the blood picture. If we summarize all these cases, we find that there is mostly only a slight reduction of erythrocyte count or none at all (or even after operation an increase in the number of erythrocytes). While in all cases there was not an appreciable reduction of hemoglobin, the leucocyte count was often diminished, and in one case increased. Most important is the result of the differential count of the leucocytes. Almost in all cases the number of neutrophilic cells is, relatively, markedly reduced, while that of the mononuclears, and especially the lymphocytes relatively and also absolutely raised. The eosinophiles show in many cases an appreciable increase. After operation the leucocyte picture may revert to normal." Experimental evidence comes to our aid in supporting the effect of the pituitary on blood cells. Gonalous (23) has shown that the blood of young hypophysectomized dogs retained its infantile character. There was a reduced number of red corpuscles and an increased number of polymorphonuclear and eosinophilic leucocytes. It is to be expected that the younger the animal the more marked would be the infantile character of the blood. Collins and Baudot (10) conclude that the embryonic pituitary has a hematopoietic function and Watrin (44) also believes that the pituitary has an erythropoietic function, while Brown and Keith (3) from their work on obese individuals conclude in part, that the circulating blood and plasma volumes when compared to body weight are smaller in obese than in normal persons. In their series, when a marked decrease in these occurred there was evidence of anemia. The relation of pituitary to fat cells I will consider later.

Smooth muscle.—The tonus of smooth muscle in hypofunction states is very much diminished, intestinal atony being the rule and in the preadolescent variety the uterus is infantile. Englebach and Tierney (16f), from their large clinical material, emphasize the atony of the smooth muscle saying that the control of the contraction of the unstriped muscles, particularly those of the intestine and uterus as well as of the bladder, vascular and bronchial systems, is one of the most striking and easily demonstrable effects of the secretion of the posterior lobe; hence the use of the virgin guineapig uterus in assaying posterior lobe extracts.

Collecting tubules of kidney and capsule of Bowman.—In hypofunction diabetes insipidus is the rule the kidneys excreting enormous amounts of urine. There still is, however, controversy whether the posterior lobe is responsible for diabetes insipidus or whether the hypothalamic area is responsible. Lewis (15c) says that in man and several other animals the pars intermedia is most abundant around the neck of the posterior lobe and spreads over and on to the adjacent surface of the brain. One could understand from this that irritation near the hypophysis might produce this syndrome. Weir (45) concludes in part that changes in the excretion of nitrogen, chlorides, acids and ammonia may be due

to direct action of the pituitary extract on the kidney or may be secondary to the changes in water excretion although Falta (17d) concludes that irritation of the posterior lobe or irritation of a definite place in the brainstem leads to polyuria. He suggests the possibility that there may be a nervous connection between the nervous centres in the brainstem and the posterior lobe.

Biedl (2a) quotes Ide to the effect that the pituitary is an older sister of the genitourinary apparatus and Gaskell (19) believed that the pituitary was at one time an excretory organ. It is well known that the posterior lobe extracts give two apparently opposed sets of reactions. One can understand that if the renal cells have not the stimulus from the posterior lobe secretion they do not function so that water is excreted in large quantities. It may on the other hand act as a diuretic by stimulating the renal cells to activity or if the dose is large enough it may act as a stimulus which produces a greater concentration and therefore has an antidiuretic effect. The difference it would seem to me, would be in the degree of renal activity which the posterior lobe secretion produces.

Fat cells.—An interesting example of the selective action of the posterior lobe secretion on mesenchymal tissues is its effect on fat cells. In hypofunction of the pituitary, as in dystrophia adiposogenitalis, there is a large deposit of fat in the body. It is my belief that whenever we find a disturbance of fat metabolism there is a disturbance of the pituitary. Diseases of the pituitary produce changes in the suprarenal cortex with consequent alteration in the lipoids and this cortical change produces alteration in the lipoids of the sex glands. The distribution of the fat does not seem to me to be of particular consequence—it all depends upon the degree of pituitary involvement. In hypothyroidism and hypogonadism we have resulting pituitary changes and in the face of this involvement we must not ascribe the obesity to the thyroid alone or to the sex glands. Evidently the same factor (pituitary) is in control of the obesity in all cases.

Carbohydrate metabolism.—The close relationship existing between carbohydrate and fat metabolism need not be emphasized. It is common observation that hypopituitarism is accompanied by a heightened carbohydrate tolerance and that hyperpituitarism is accompanied by a lessened carbohydrate tolerance. Ainslee and I (36) have completed experiments which verify Burns' (6) experiments showing that posterior lobe extracts and insulin are antagonistic. Posterior lobe extracts cause a temporary rise in the blood sugar. It would be interesting to speculate whether this is due to the conversion of some of the lower fat products such as glyceric aldehyde into glucose.

Suprarenal cortex.—It is frequently found to be atrophic in hypofunction of the pituitary. The suprarenal cortex reflects the state of the pituitary, particularly the posterior lobe, as experimental evidence shows. Hoffstatter's (28) experiments of injecting posterior lobe extracts into seventy rabbits showed that the most constant finding was the enlargement of the suprarenals. The suprarenal cortex was hypertrophic. In the previous article (35) evidence was presented to show that brain defects involving the pituitary gland are accompanied by defects in the suprarenal cortex and Falta (17e) cites a case of dystrophia adiposogenitalis in which the atrophy affected exclusively the cortex. Ponfick (39) cites a case in which the pituitary was partially destroyed and the suprarenal cortex was small. Gougerot and Gy (17f) report a case in which the pituitary was sclerosed and the suprarenals likewise were sclerosed, but chiefly the cortex. If we accept the conclusion that the suprarenal cortex secretion has a selective action on mesothelial tissues, then pituitary involvement through the intermediary of the suprarenal cortex affects the mesothelial tissues. From a practical viewpoint the important mesothelial tissues are the sex glands and the skeletal muscular system. In hypofunction of the pituitary the well known lack of genital development is an outstanding feature. Lisser (33) showed that the prostate as well shares in the underdevelopment of the sex glands. Women are frigid, sterile and, depending on the degree of involvement, have amenorrhea. The genitalia are underdeveloped. In men the testicles remain small showing absence of spermatogenesis. Secondary sex characteristics are absent in the preadolescent cases.

The skeletal musculature in hypofunction of the pituitary is practically always involved, Goodhart and Janney (30) believing that the pituitary is concerned with muscular dystrophy. Muscular asthenia in some cases closely approaches that of Addison's disease and the histological examination of the muscle tissue reveals degenerative and atrophic changes. Infiltration with fat has also been reported (17g-34) The heart muscle likewise is atrophic.

(Acromegaly, Gigantism). In hyperfunction of the pituitary we see clinically the opposite condition to hypofunction. I wish to reemphasize that many of the symptoms and changes noted in the tissues are, of course, dependent upon the stage of the disease. I refer particularly to acromegaly, in which disease there is in the primary stage a hyperpituitarism and in the secondary stage a hypopituitarism.

Connective tissue.—The connective tissue is everywhere increased. In some cases fibrous tumors form, giving rise to Von Recklinghausen's disease and molluscum fibrosum. Castro (8), for instance, reported Von Recklinghausen's disease with acromegaly. Biedl (2f) emphasizes the swelling of the subcutaneous tissues.

Cartilage.—All cartilaginous structures increase in size. The larynx is very large with general overgrowth as noted by Chevalier Jackson (29). The voice, including that of women, becomes deep. The cartilage of the ears is also enormously enlarged.

Bone.—The bony changes are one of the most characteristic phases of the disease. The bones are unusually large and if the disease develops in postadolescence then the acromegalic type of bone formation is present, that is, the epiphyseal ossification broadens so that there is an increase in breadth more than in length. The bony attachments for the muscles are enlarged.

Dentine and cementine of teeth.—The teeth are very well developed, being enlarged and separated. Prognathism is frequent.

Lymph glands.—The lymph glands are enlarged and show a true hypertrophy. Goldstein (22) reports a case of acromegaly with lymphatic leucemia in which there was splenomegaly with lymphomegaly. Lymphatic enlargement is, however, not characteristic of acromegaly alone as many other endocrine diseases show this.

Spleen.—The enlargement of the spleen is practically a constant accompaniment of hyperpituitarism. Falta (17h) says that the splenomegaly is a partial manifestation of the enlargement of the lymphatic apparatus.

Blood vessels.—Arteriosclerosis is one of the earliest changes seen in hyperpituitarism. Klebs (15d), Brooks (15d) and others stress the blood vessel findings. The blood vessels become dilated and the microscopical examination shows that all three coats are involved. There is usually an increase in blood pressure. Head (27) reports two cases of multiple hemangiomata of the skin in association with dyspituitarism. Pribram (40) reports a case of Raynaud's disease in which was found an enlarged sella but no evidence of acromegaly. Boettiger and Oeconomaki (15d) have also observed signs of Raynaud's disease in acromegaly. Nicolis (38) found an enlarged sella in Raynaud's disease.

Blood.—In the early stages of hyperpituitarism there is noted an increase of blood volume as one would expect because of the bone marrow hyperplasia and general lymphatic enlargement. Beattie and Dickson (1) in three cases of acromegaly found an increase of the red blood cells. Chvostek (15d) states that the blood is often found at necropsy to be increased in quantity. Both polycythemia and slight anemia may occur. Relative lymphocytosis is also found (Franchini and Giglioli (18)). In the hypofunction stage of acromegaly reduction in the number of erythrocytes and polymorphonuclears are found.

Fat cells.—The relation of the posterior lobe to fat metabolism is of greatest importance. In hyperpituitarism there is an increased fat metabolism, the fat deposit being in proportion to the general bodily increase so that a good panniculus is present but obesity is absent and a marked hyperpituitarism may result in emaciation. Rabbits injected with posterior lobe extract over a course of time results in the animals being thinner than the controls. (Ainslee and Moehlig (36)). Cholesterin metabolism it seems is influenced by the pituitary secretion and that of the suprarenal cortex, the latter as noted by Goormaghtigh (24) in the case of infections pouring out cholesterin and proceeding to secrete more. Gonalous (23) showed that the pituitary and chiefly the posterior lobe contains a considerable amount of cholesterin, and in dogs an increase in circulating cholesterin results from hypophysectomy. Lack of these secretions results in lipoidemia and cholesterinemia. Likewise the reason why fat individuals are pre-disposed to cholelithiasis is evident. There is an increased stimulus to cholesterin formation from the hyperactive pituitary and suprarenal cortex. The obese individuals are, of course, predisposed to diabetes, as Joslin so well emphasized.

Mori (37) fed rabbits with fat. He found the cortex was enlarged and the amount of neutral fats and cholesterin ester was increased. Lipemia and cholesterinemia were also found in accordance with the amounts contained in the suprarenal. Hence the suprarenal seems to be an organ related to the metabolism of neutral fat and cholesterin. The changes were never found in the suprarenal medulla.

Lipoidemia is often present in severe diabetes in which the suprarenal cortex is atrophic (43). This may be due to exhaustion of the pituitary mechanism (posterior pituitary lobe and suprarenal cortex). The suprarenal cortex atrophy also accounts for the sexual hypofunction and extreme asthenia seen in the later stages of diabetes. Changes in the pituitary are frequently found in diabetes, and acromegalic diabetes is well known.

Smooth muscle.—Intestinal spasticity is frequent. (Engelbach and Tierney.) The use of posterior lobe extract for its contracting effect on the smooth muscle system is a well known clinical demonstration. Zondek (46) believes that the extract exerts a regulatory action on peristalsis.

Collecting tubules of kidney—capsule of Bowman.—The kidneys are enlarged and show on microscopic examination enormously enlarged glomeruli. Albuminuria is also found. Glaesnner (20) found that injections of posterior lobe extracts in nephritis lessens albuminuria and causes red blood cells to disappear.

Suprarenal cortex.—Hyperplasia and hypertrophy of the suprarenal cortex is found in hyperpituitarism. In the hyperactive acromegalic state, hyperplasia affecting especially the suprarenal cortex is found. Delille (13), Amsler, Ausch, Schroeder, Mullaby, Harbitz (15f), Biedl (2c), Falta (17), Elterer and many others have found hyperplastic suprarenals. Falta (17h) says it is very probable that in the future when we pay more exact attention to the relations of the pituitary and suprarenals, we will find hyperplasia of the suprarenals, and especially of the cortex, in many cases of acromegaly.

Therefore, if my opinion is correct that the suprarenal cortex secretion has a selective action on mesothelial tissues, the hyperplastic state of the suprarenal cortex should result in hyperactivity and development of the mesothelial tissues. As before mentioned, the important mesothelial tissues from a clinical viewpoint are the sex glands and skeletal musculature. Hyperplasia of the sex glands with symptomatic increase of function is present in the earlier stages of acromegaly. Hatai (26) found that in white rats "a sex difference (in the pituitary) appears in animals weighing fifty grams or more; that is to say, at precisely the same stage of development as in the case of the suprarenals." The pars intermedia and posterior lobe resemble the suprarenals and the parathyroids in possessing a high growth energy.

The interstitial glands have an increased function. All the secondary sex characteristics are sharply accentuated. Women become masculine in type and after a period of increased menstruation the latter ceases entirely. The external genitalia are hyperplastic and their dimensions increased. In the later stages the interstitial gland function lessens. Absence of spermatogenesis and oogenesis results in the later stages.

The skeletal musculature at the beginning shows an immense hypertrophy including that of the heart. Acromegalics in the early stages are very muscular and strong, and as Engelbach and Tierney (16c) state, these individuals acquire muscular strength without exercise. They are able to perform feats of great strength. The heart muscle hypertrophies so that a relative valvular insufficiency results. In the hypofunction stage extreme weakness results. Duchesneau (14) states that the muscles in this stage reveal atrophic, degenerative and sclerotic changes. Martinotti believes that the atrophic state is preceded by one of hypertrophy, as he observed an increased diameter of the muscle fibres and proliferation of the sarcolemma nuclei. Brooks also observed mitoses in these nuclei. The supposition that a preliminary stage of muscular hypertrophy exists is greatly strengthened by the fact of the characteristic bony hypertrophy at points of muscular insertion which we have described as being the most striking skeletal changes. Fibroids of the uterus are frequently present.

Mesenchymal Tissues	*Hypofunction*	*Hyperfunction*
	(*Preadolescent type of disease*)	
Connective Tissue	Not well developed	Increased
Cutis	Alabaster skin	Thickened
Tendons	Small	Large
Cartilage	Not well developed No ossification	Large well developed —ossified
Bone	Undergrowth—small	Large overgrowth
Dentine and Cementine	Soft crumbly—poorly developed	Large—well developed —far apart
Lymph Glands	Small—hypoplastic	Large—hypertrophic
Blood Vessels	Hypotonia—small aorta	Arteriosclerosis—hypertension
Blood	Diminished volume—anemia	Polycythemia—increased volume
Fat cells	Increased due to decreased fat metabolism.	Increased volume fat metabolism
Smooth muscle (uterine portion)	Atony—infantile uterus	Increased muscle tone normal or fibroid uterus.
Collecting tubules, capsule of Bowman	Diabetes Insipidus Polyuria — lessened function.	Enormously enlarged —increased function
Suprarenal Cortex	Atrophic—aplastic	Hyperplastic
Mesothelial tissues		
Sex Glands	Small—not developed	Enlarged—hyperactive
Skeletal musculature	Poorly developed — fatigue	Hypertrophied—great strength
Heart	Small	Large—hypertrophied

SUMMARY[1]

1. Clinical evidence has been presented which tends to show that the secretion of the posterior lobe of the pituitary gland has a selective action on mesenchymal tissues.
2. The suprarenal cortex as part of the mesenchyme, is involved through pituitary pathology.
3. The suprarenal cortex secretion has a selective action on the mesothelial tissues.
4. Through the intermediary of the suprarenal cortex, pituitary pathology produces changes in the mesothelial tissues as well as the mesenchymal.
5. Many clinical problems can be better understood on an embryological basis as presented in this paper.

[1]The author's references will appear in the reprints of this article.

Adrenalinuria: Its Relation to Hyperglycemia and Its Clinical Possibilities

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In these days of scientific advancement, an acute development of intense interest on the part of the medical profession toward the employment of the laboratory as an aid in diagnosis is unquestionably manifest. Enthusiasm is an excellent attribute but the conscientious practitioner who has had a medical career of some duration must admit that frequently laboratory reports mean nothing but lead to perplexities and disappointments in the solution of major medical problems.

It is not my intention to discuss anything that can be found in text books, but rather to call attention to some recent observations which will in some measure be of actual help to the clinician as well as to the pathologist.

Let us examine any standard textbook on physiological chemistry, and in the chapter on glycosuria we are told that traces of sugar occur in normal urine, but not in sufficient amount to be readily detected by ordinary qualitative tests. We are also informed that alkaline solutions of copper, (Fehling's and Benedict's) of bismuth (Nylander's), as well as mercury and ammoniacal silver are reduced by sugars. Finally come the polariscope, phenylhydrazine and fermentation as means of differentiation. Proceeding in more detail with the first three it is well known that Fehling's and Benedict's solutions are reduced by uric acid and creatinine, while Nylander's solution is not affected by these and is further sensitive to 0.08 per cent. glucose.

In another paper of recent publication (1), I described a method for the quantitative estimation of adrenalin in urine and casually mentioned the fact that adrenalin reduces Fehling's, Benedict's and Nylander's solutions and that it gives a red color with picric acid and sodium carbonate. The clinical significance of these reactions will be elaborated upon here and other tests common to this base and which are of diagnostic value will be introduced. Before, however, entering into this, various chemical tests for epinepherine will be given for the sake of clearness.

Adrenalin reduces Fehling's, Benedict's and Nylander's solutions identical of sugar. It reduces mercury, ammoniacal silver, and gold and platinum chloride solutions very energetically in cold. With Millon's reagent it causes a cherry red color similar to tyrosin. Ferric chloride produces an emerald green which changes to red as with tyrosin. Sulphanilic nitrous acids with ammonia produce a red color which is proportional to the adrenalin concentration (basis of author's determination). A

saturated solution of picric acid with sodium carbonate and heat (the Lewis and Benedict blood sugar method) produces the same red color typical of sugar. It obviously gives the Folin test for creatinine in blood. It also reacts with the new Folin blood sugar determination. A concentrated solution of sodium nitroprusside conducted as per the Le Nobel test for acetone in urine gives a reddish violet ring with adrenalin not identical with that of acetone, yet easily mistakable. A yellowish pink color is sometimes obtained. Epinepherine is optically active and according to most observers is levorotatory, while others have reported the synthetic product to be dextrorotatory. It has been shown by Kariya and Tamaka (2) and Menten and Crile (3) to be capable of converting venous blood into arterial blood upon exposure to air and of converting hemoglobin into oxyhemoglobin. The reader is no doubt familiar with the popular phosphotungstic acid (uric acid) test for adrenalin, Folin's assay, and the effect of all oxidizing agents upon the substance.

It will be readily seen from the foregoing that some of the slight reductions frequently observed in urine with the Fehling or Benedict test might be due to adrenalin. Differentiation tests particularly in traces have not been found to be helpful. Adrenalin determinations carried out experimentally on just such urines disclosed in a large number an excessive amount of adrenalin to be present. Normally, epinepherine has been found by me upon application of the estimation to be present in urine between 0.2—0.4 mgm. per 100 c. c. These amounts and up to about 0.5 mgm. do not cause any change with either Fehling's or Benedict's. It is of interest that in some cases of diabetes mellitus in which I found as high as four to five per cent. sugar in the urine which was identified as glucose, blood sugar high, adrenalin estimations showed in some an increase as high as 1.0 to 1.5 mgm. per 100 c. c., while others showed an absolute absence of this substance. It is common to find both albumen and casts in some diabetic urines while others have an abundance of calcium oxalate crystals. The significance of these crystals will be the subject of a subsequent paper. The albumen and casts, however, should not be simply considered a kidney involvement when it is possible that the same agent that may be causing the nephritis, may also be a contributing factor toward the diabetes. It is far remote from my mind to dispute the well established and important part played by the pancreas in carbohydrate metabolism; still, while the pancreatic theory of diabetes has by far the greater number of followers and while the fact that depancreatized dogs become diabetic has been established, the pancreas as the seat of alteration in all human diabetes has not been proved and is perhaps questionable. It is admitted by Allen in his book *Glycosuria and Diabetes* that there are many cases of human diabetes in which no anatomical alteration of the pancreas has been demonstrated, for which the existence of a functional pancreatic disturbance is admitted as the cause in these cases. Bearing this out, experiments performed by Cannon, McIver and Bliss (4) show that the sympathetic control of the discharge of adrenalin plays an essential part. Briefly, this work was carried out on cats in which the heart was isolated from the nervous system. Chloralose was used as an anesthetic. The blood sugar was reduced by injections of insulin. When the percentage fell below 0.1 to 0.07 per cent. with intact adrenal glands, there was an increase in the heart rate and a checking of the fall in sugar. Where the adrenals were removed or isolated from the nervous system these changes did not occur and the reduction of blood sugar continued until the animal died. It is commonly believed that intravenous injections of adrenalin cause hyperglycemia, glycosuria, and if continued for some time, kidney lesions. Then Herter (5) caused both hyperglycemia and glycosuria by painting the pancreas with adrenal extract. It seems then that the pancreas must be coordinated with all the other factors of this complicated problem, namely the thyroid, adrenal and pituitary (6) glands working either as compensatory or regulating members, for, according to Sajous, the endocrine glands seem to function in harmony and any discord in one might seriously affect the others. It is admitted today that in such conditions as fevers, pneumonia and other acute infections the adrenals are involved. Concurrent with the fever and high blood pressure there is a decided reduction with the sugar reagents. In several of such cases in which the adrenalin estimation was performed the content was found to be very high, showing beyond question that the reduction was not due to sugar. It is coincidental that the kidneys are temporarily affected as shown by the albumen and casts; in fact, the blood chemistry shows a typical picture of nephritis. Acetone and diacetic acid reactions are usually strongly positive.

I have frequently noted peculiarities with the sodium nitroprusside test for acetone and have often questioned the specificity of this reaction. The ferric chloride test for diacetic acid has also given results which were strongly suggestive of being due to another substance or substances. Legal in 1882 found that sodium nitroprusside reacted with creatinine. Phenols have been reported by numerous recent observers to give a yellow color with this compound. A very recent article by Bigwood and Ladd (7), regarding positive acetone and diacetic acid reactions in diabetic and nephritic cases void of clinical symptoms, concluded as follows:

1. A solution of pure acetone gives a color reaction with sodium nitroprusside.

2. A solution of diacetic acid as free as possible from acetone also gives a color reaction with sodium nitroprusside.

3. Such a solution of diacetic acid gives a color reaction which ferric chloride acetone does not.

4. Electrolytes present in urine, especially sodium chloride, tend to intensify the color of the ring in the sodium nitroprusside test.

5. Quantitatively because of the many interfering substances the tests as routinely done serve as only the crudest approximations in indicating the amounts of acetone and diacetic acid present. The ferric chloride test appears to give results somewhat less eccentric than the nitroprusside test.

I am in accord with these findings and can add as already mentioned that pure crystals of adrenalin both in test tube and added to urine give a reddish violet color with sodium nitroprusside; with some urines it has been my experience to obtain at times a yellowish pink which has as yet no explanation. Hubbard and Wright (8), in studying the effect of adrenalin on blood constituents, also found that acetone bodies appear after the injections of small amounts of adrenalin chloride. This suggests a connection between the acetone reaction and the Benedict reduction in pneumonia and allied conditions.

In regard to blood chemistry, accurate data on the chemical composition of blood are of comparatively recent origin. Although the chemical study of blood has yielded a very broad scope in the diagnosis and treatment of disease yet the last word on the subject is still a good way off. Of primary importance again from the standpoint of adrenalin is the interpretation of sugar content of blood. Dobson, in 1775, was the first to recognize a sugar like substance in blood, but it was actually discovered by Claude Bernard some seventy years later, who made many of our classic observations on carbohydrate metabolism and first noted the connection between hyperglycemia and glycosuria. It remained, however, for Bang (9) and Lewis and Benedict (10) in 1913 to introduce methods for its estimation in blood. The former method being a gravimetric-volumetric one precluded extensive clinical application, which led to the survival of the Lewis and Benedict method. This last has only recently been replaced by the Folin method.

The subject of diabetes is entirely too vast and out of place in this paper, but the socalled renal diabetes will be briefly considered. Lépine in 1895 postulated the existence of a rather interesting condition in which the glycosuria is actually the result of renal disease and not due to hyperglycemia as in diabetes. The literature records a large number of these cases in which there is definite evidence of renal disease aside from the glycosuria, but a large number would appear to be entirely free from the symptoms associated with kidney disease. These present a history of low grade glycosuria without the classic symptoms of diabetes mellitus and are diagnosed as the socalled "renal diabetes." They are accompanied by a hypoglycemia. Adrenalin estimations done on a large number of such cases showed an excessive amount of adrenalin to be present in the urine from which it might be inferred that the reduction is due to adrenalin and not glucose.

In severe nephritis Meyers & Killian (11), De Niord and Schreiner (12), Williams and Humphreys (13) have shown the blood sugar to be high: in fact, the consensus of opinion is that the blood sugar varies directly with the severity of the disease. It has been reported by Baily (14) and is of importance that in marked interference with kidney function very small amounts or no sugar appears in the urine, whereas the blood sugar is very high, in fact, as high as 0.2 to 0.3 per cent. blood sugars have been observed before traces of sugar appear in the urine. This condition of hyperglycemia has as yet not been satisfactorily answered except that some disturbance of the adrenals or other glands has been suspected for both the high blood sugar and pressure. It is generally conceded that creatinine interference in blood sugar estimations with the Lewis and Benedict method is a basis of error. While there is no doubt that creatinine does influence some blood sugar findings, it is much less than implied and does not invalidate any deductions based on this finding; moreover, as already mentioned, adrenalin reacts with all the blood sugar estimations causing by far a much greater error; in fact I have definite evidence[1] that we are actually estimating adrenalin and not sugar. Aside from my own experiments just referred to, Winter and Smith (15) have observed that the mixture of sugars present after the injection of adrenalin appears to be similar to that existing in diabetic blood before the injection of insulin. Phenyl osazones have been prepared from the blood of rabbits after the adrenalin, and from the blood of diabetics; crystalline osazones other than glucozone have been observed. Slight retentions of creatinine have also been found to occur in syphilis, certain heart conditions, sometimes in fevers, in pneumonia and in some cases of advanced diabetes. These have no explanation. Since picric acid is also employed as the basis of this test, it should not be surprising that adrenalin reacts with the Folin creatinine estimation in blood. To prove this with certainty, I ran some pure crystals of adrenalin P. D., through the Folin blood creatinine test and obtained a decided deepening in color proportional to the number of crystals used. Repetition confirmed these results. This work was not quantitative but approximate.

It will now be seen that the same endocrine product may be responsible for the high blood sugar and pressure as well as influencing the creatinine. Addis, Barnett and Shevsky (16) have reported that appropriate doses of adrenalin increase the excretion of urea. The apparent acidosis or diminished carbon-dioxide content of blood in pneumonia and nephritis may be explained in perhaps two ways: first, it may result from decreased elimination of normally formed substances such as in nephritis or secondly, Tompkins, Strugis and Wearn (17) have found that epinepherine injection causes an increase in metabolic rate and influences the output of carbon-dioxide.

Let us view glycosuria from another angle. We know that in the blood we have a fluid which is composed of a great many products of intermediary metabolism, the concentration of which is kept remarkably constant. The kidneys exert a remarkable selective power for their secretions so that the various substances are maintained at definite levels of concentration in the blood. Take for example the excretion of chlorides; if a person is on an absolutely salt free diet the chlorides in the blood will remain at a constant level and the kidneys will refuse to excrete any of it. If, on the other hand, a person ingests a large amount of chlorides, the moment absorption begins and its concentration in the blood tends to rise, the kidneys at once begin to excrete chlorides so as to have a definite constant in the blood. The same is true of sugar; the promptness

[1]Unpublished experimental work almost completed.

with which the kidneys adjust themselves in regulating glucose is marvelous. The blood normally contains from 0.09 to 0.12 per cent. sugar. None of it is excreted by the kidney except as claimed by Benedict, traces of no practical importance. If, however, for some reason or other the glucose constant reaches about 150 or 180 mgm., the kidneys immediately begin to excrete it so as to lower its concentration in the blood. The idea therefore that the blood sugar should rise to as high as 0.2 to 0.3 per cent. before traces of sugar appear in the urine, or that urine should show a glycosuria without a hyperglycemia does not seem to be at all consistent. Since adrenalin is known to cause a rise in blood pressure and since it has been shown to give both the urine and blood sugar tests it is reasonable to suppose that a good many of these socalled hyperglycemias and glycosurias are actually adrenalin. It has been observed and is accepted that high blood sugar readings are obtained in hyperthyroidism (not always on a fasting stomach), while in Addison's disease the blood sugar is usually below normal. In regard to the former, experiments conducted on thyroid have not been entirely satisfactory due to great variations existing in the different commercial products. I am, however, led to believe that thyroid also gives the blood sugar tests, namely, the Lewis and Benedict. Insulin (Iletin Lilly) and pituitary extract (anterior lobe) do not react with either the urine or blood sugar tests.

Another condition which has as yet no satisfactory explanation and which appears to have its origin in the adrenals is hypertension in its relation to cardiorenal diseases. While opinion as to its cause is divided the majority attribute it to over activity of the suprarenal glands. From the laboratory viewpoint the literature is not as copious as it might be. Meyers (*Practical Analysis of Blood*) makes mention of some six complicated cases, nephritis, etc., in which the urea, sodium chloride and creatinine appear to be normal whereas the uric acid and blood sugar are high, the latter varying from 120 to 160 mgm. per 100 c. c. O'Hare (18) reports the glucose tolerance test performed on some twenty-five cases of chronic vascular hypertension in which according to his paper the element of general retention which complicates in true nephritis was not present. His results showed in the majority of cases a marked hyperglycemia varying from 130.0 to 300.0 mgm. per 100 c. c. Of these, many showed a varying glycosuria in some as high as from two to four per cent. Repetition of two bad cases done at other times showed quite a normal blood sugar with but a slight glycosuria. My own observations on a few cases, some of which were uncomplicated, showed a retention of sodium chloride and calcium with a marked hyperglycemia, without glycosuria. Remarks further than what has been generally said regarding adrenalin giving all the sugar tests, from the sparse number of cases would be a matter of conjecture. It has been shown that injections of adrenalin cause both hypertension and arteriosclerosis. Experimentally, perhaps the best known work is that of Klotz (19) who used adrenalin. It seems that adrenalin produces lesions comparable to some types of human arteriosclerosis. There is doubt whether this result is due to the blood pressure raising effect. When the hypertension effect of adrenalin is prevented by the administration of vasodilators along with it, the same arterial lesions are produced. So it appears that it might be due to some toxic effect of adrenalin rather than the mechanical effect of hypertension. It is therefore obvious that adrenalin might be one of the natural causes and again the substance that we are calling sugar may be epinepherine.

The foregoing are perhaps only a small number of conditions in which the adrenals seem to take an active part either directly or indirectly, as shown by proper interpretation of blood and urine findings. Appended are a few cases taken from some 300 unselected ones from a hospital clinic. The diagnoses were not made by the writer but were taken from the records.

Although mention has been made of a test for adrenalin in blood and correction of our blood sugar methods to distinguish between true hyperglycemia and high readings not due to glucose, I shall refrain from discussing these at this writing.

In passing, it might be well to add that it is admitted that the results of the various methods in blood chemistry are of the utmost importance. The procedure has been worked out carefully, and it takes skilled chemists to carry out these estimations accurately so that they will be of value, as apparently conflicting results are obtained when entrusted to uninstructed persons who know nothing more than motions. This is also true of urine examination for the physician must rely upon the experience and good judgment of the chemist to know when he has a clean cut reaction or when a reaction is not specific suggesting the possibility of interference with or, perhaps the reaction of a substance other than the one tested for.

CONCLUSION[1]

On the basis alone of facts presented we must differentiate between glycosuria and adrenalinuria.

We are led to suspect a relationship between high blood pressure and hyperglycemia or hyperadrenalinia in some conditions. What this relationship is should be a matter of investigation for it is certainly a new field for clinical and laboratory work. Other tests mentioned must be properly interpreted to be of any value.

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[1]A complete list of references and summary table will appear in the author's reprints.

A Clinical Study of Endocrine Disturbances in Rhinological and Laryngological Cases*

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During the last six years, in Dr. McCullagh's clinic at the Manhattan Eye, Ear and Throat Hospital, I have made quite a few observations on the possible rôle some of the glands of the internal secretions may play in the causation of certain symptoms of the nose and throat. In the short space at my disposal I shall consider briefly only such endocrine cases as I have seen and studied in the clinic, and for the purpose of elucidation I shall classify them according to the most prominent symptoms they presented. Before discussing the various cases I will first group the symptoms under the following headings:

I. Local Symptoms. 1. Rhinological: a. rhinorrhea, b. sneezing. 2. Laryngological: a. choking sensation, b. hoarseness, c. irritation of pharynx (pharyngeal neuroses.) 3. Respiratory: a. nasal obstruction. b. dyspnea, c. attacks of suffocation.

II. General Symptoms and Signs: nervousness, weakness, palpitation of the heart, mental excitability or mental dullness, headache, constipation or diarrhea; dry and pasty or moist and flushed skin, fine tremor of the tongue and outstretched fingers, rapid or slow pulse, enlarged thyroid gland, certain eye symptoms, like exophthalmos, dilatation of the pupils, etc., small sella turcica with erosion of the clinoid processes, enlarged thymus, certain abnormalities of the teeth, certain changes in the distribution of the hair, etc.

The symptoms referable to the nose and throat were the dominant symptoms for which the patients came to the clinic. The general symptoms and signs were elicited on close questioning and careful examination, and helped to determine the underlying condition, i. e., what particular endocrine gland or glands were probably involved.

1. CASES WITH RHINOLOGICAL SYMPTOMS

Rhinorrhea and Sneezing—A detailed description of the mechanism and treatment of rhinorrhea and sneezing with an analysis of thirty-four cases was the subject of a thesis before the American Laryngological, Rhinological and Otological Society. I do not consider every case of watery discharge from the nose as being of endocrine origin. However, a considerable number of patients, complaining of rhinorrhea and sneezing, are seen in whom close examination excludes intranasal causes, as well as other etiological factors, such as sensitization and intestinal disturbances, who improve or get well on endocrine therapy. Furthermore, some of these patients present certain endocrine markings, which have been described by competent observers as indicative of a mild hyperthyroidism or hypothyroidism. Other patients apparently show no obvious disturbance of the glands of internal secretions and yet they also respond to endocrine treatment. I have therefore divided these patients into three groups: 1. the mild hypothyroid, 2. the mild hyperthyroid, and 3. the indeterminate group.

Patients with moist, flushed skin, more or less rapid pulse, palpitation of the heart, nervousness and mental excitability are tentatively classed under the hyperthyroid group. Those with dry, pasty skin, more or less slow pulse, and mental dullness are tentatively classed under the hypothyroid group. A certain number, as indicated above, cannot be classified. The patients that improve markedly on thyroid extract are then considered hypothyroid, and those that improve on quinine hydrobromate, hyperthyroid types. A number of the unclassified type respond to either thyroid extract or quinine hydrobromate or to neither[1].

Patients classified as hypothyroid are given thyroid extract, one tenth grain t. i. d. The rationale of this treatment is shown by the fact that these patients are relieved not only of their rhinorrhea and sneezing but also of other symptoms of hypothyroidism, as constipation and mental dullness. For the hyperthyroid patients quinine hydrobromate, three grains in capsules, b. i. d. or t. i. d., is prescribed. These patients, too, show improvement not only in the rhinorrhea and sneezing, but also in other symptoms of hyperthyroidism, as nervousness and tachycardia.

In the indeterminate group, where it is impossible to say whether we are dealing with a mild hypothyroidism or hyperthyroidism, thyroid extract one tenth grain t. i. d. is tried for about a week. If there is improvement the drug is continued. If no improvement is evident, quinine hydrobromate is given. Some patients, however, can not tolerate the latter drug well, as it may cause dizziness, weakness and other annoying symptoms, and therefore should not be given more than one grain of the quinine hydrobromate two or three times a day.

2. CASES WITH VAGUE LARYNGOLOGICAL SYMPTOMS

Choking sensation.—In a previous article (1) attention was called to the fact that patients came to the clinic complaining of catarrh or some vague throat condition, in whom close study revealed increased stimulation of the thyroid gland. Most of these patients characterized their discomfort in the throat as a choking sensation. On questioning it was discovered that they were of a nervous temperament and had palpitation of the heart on slight exertion. They usually had a moist, flushed skin, and a fine tremor of the tongue and outstretched fingers. The thyroid gland was slightly enlarged and the pupils were usually dilated. The most characteristic and constant symptom was an increased pulse rate even at rest. These patients were sensitive to adrenaline. This should be remembered when performing an

*Read before the Section of Rhinology and Laryngology, New York Academy of Medicine, April 23, 1924.

[1]The basal metabolism is not determined, as I do not believe it would be of any practical value in these mild, borderline cases.

operation on them under local anesthesia, as most of them have diseased tonsils. Foci of infection in other parts of the body are also frequently present.

The treatment of these patients consists in the localization and elimination of all foci of infection by surgical or medical means, and the administration of quinine hydrobromate. Those patients who can not tolerate the latter drug are given adrenal residue, ten drops three times a day[1]. Of course, hygienic and dietetic treatment must not be omitted. This treatment has been successful in the clinic even in well marked cases of thyroid disease, and no operation on the thyroid gland has been performed during the last six years, except in thyroid cysts and adenomata.

Hoarseness.—Marked hoarseness caused by large goitres pressing on the laryngeal nerves with resulting paralyses of the vocal cords is not included. I wish to direct attention to patients, seen occasionally, with very slight enlargement of the thyroid gland, and with mild symptoms of hyperthyroidism, in whom the vocal cords move properly, but do not come in direct contact on phonation. These patients are only slightly hoarse. Whatever the cause of the hoarseness, it is interesting to note that it is relieved by treating the mild hyperthyroidism and not by treating the larynx. I have reported such a case (1).

Pharyngeal neuroses.—Bizzare complaints in the throat by neurotic women at the menopause are quite frequent. For the purpose of illustration the following case report is submitted.

Case I.—T. L., a widow, fifty years old, a cook by occupation, came to the Hospital, May 13, 1922, complaining of a scratching feeling in the throat and a constant desire to swallow for the last twelve months. Her previous history was of no significance, except that she had a goitre, which was first noticed when she was thirty years old. She thought the goitre developed after continued worry and excitement. She was unhappily married, at the age of seventeen, her husband having been a confirmed drunkard. When she was forty years old, the goitre had increased in size, and she suffered from palpitation of the heart and extreme nervousness. A thyroidectomy was then performed. Two years before she came to the clinic she had had her last menstruation, which up to that time was more or less regular and of normal character.

Examination of the nose and throat was practically negative. The usual local treatment to the pharynx was of no benefit to her. In view of the fact that a thyroidectomy had been performed, it was thought that perhaps too much glandular tissue had been removed, so small doses of thyroid extract were prescribed. The symptoms in the throat were not relieved, but the pulse rate was increased, and she complained of excessive nervousness and also palpitation of the heart. Thyroid extract was manifestly contraindicated. Therefore, on September 15, 1922, ovarian extract, five grains t. i. d., was substituted. Since that time she has been absolutely free from the throat symptoms, provided she did not lapse in the taking of ovarian extract. It not only relieved her of her symptoms in the throat, but also of a peculiar tingling and drawing feeling of the entire skin. As a matter of fact, she felt much better while taking the ovarian extract.

This case shows the importance of giving only one glandular product at a time. This method is not only more scientific, but safer. If, for instance, she had been given a combination of thyroid and ovarian extract, as is usually done, and it had been continued for such a long time, in order to get the effect of the ovarian extract, she certainly would have suffered from the toxic effect of the thyroid extract.

Respiratory Symptoms

Nasal obstruction.—In a previous paper (2) there are described two groups of cases belonging to the status thymicolymphaticus type. In the one group there is nasal obstruction present. Such patients are frequently referred for the removal of tonsils and adenoids. On further examination it is found that these patients, in spite of their healthful appearance, are very weak and present certain signs that have been associated with a status hypoplasticus. The thymus gland may be slightly or not enlarged.

Dyspnea and attacks of suffocation.—In the second group of cases the thymus gland is enlarged, and the most prominent symptoms are dyspnea or attacks of suffocation, especially at night. If a mother tells us that her child cannot breathe normally and has choking spells at night, it is our duty to ascertain the exact nature of the respiratory difficulty. Enlarged tonsils and adenoids do not cause dyspnea or attacks of suffocation.

Pituitary headache.—The headache, in the majority of cases we see, is due to nasal sinusitis. A definite type of pain, supposedly due to an increase of the pituitary gland in an enclosed and small sella turcica, has been described by neurologists. This pain is usually bitemporal or deep in the forehead behind the eyes. It is relieved by the administration of pituitary extract. Laryngologists see such cases very seldom. I have reported such a case (3).

Comment

Although we know little of the conditions within the body that control the endocrine glands, the importance of studying the patients from the endocrine aspect cannot be too much emphasized. If it does nothing else, it leads us to closer observations, and makes us better physicians. It forces us to consider the patient as a whole, and not only his upper respiratory tract. It makes us realize that many rhinological and laryngological phenomena can only be explained on the assumption that they are local manifestations of some general condition. Even though there is in all probability a close interrelation between the various glands of the internal secretions, it is not so easy to prove it to the satisfaction of scientific investigators. In the present state of our knowledge it is therefore wiser to use uniglandular therapy in treating supposed endocrine conditions.

In conclusion I wish to express my sincere thanks to Dr. Samuel McCullagh and to Dr. Francis White, who have given me every opportunity to study these cases.

[1]Adrenal residue is to be distinguished from adrenalin. Whereas adrenalin is derived entirely from the medulla, adrenal residue is derived mostly from the cortex of the adrenal glands.

Case II and references will appear in the author's reprints.

Cardiovascular Symposium

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, SEPTEMBER 3, 1924

Bradycardia

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Bradycardia, as the term clearly indicates, may be taken to denote abnormal slowness of the heart beat, i. e., a rate relatively below the usually accepted standard. With reasonable allowances for functional deviations it is customary to assume the normal resting rate of the adult man to be 72 a minute, and, in a purely arbitrary fashion, we may denote and apply the term bradycardia to heart rates of 60 and under.

The sign as such is noteworthy for two reasons: 1, the rarity of the condition, and 2, the clinical phenomena which frequently coexist, incidentally also the varied etiology which, during recent years, has become increasingly simplified by the comparative study of clinical and laboratory data. The practical outcome of these latter enables us to formulate, with some precision, a fundamental basis from which to approach the problems connected with the study of bradycardia.

In conformity with the approved grades of elasticity which stamp the functional activities of all vital processes there need be no hesitation in allowing an ample latitude for the rate of the normal heart beat, hence we must recognize that a slow heart rate *per se* need not of necessity be indicative of pathological processes. Fortunately much of the haze which, until recently surrounded and fogged our conception of the heart's contraction, has now been lifted, and clearly defined details have emerged; we recognize certain specialized areas, remnants of the primitive cardiac tube, whose peculiar function it is to incept stimuli in rhythmic series, and so to assure regularity in the sequence of heart's contractions. Investigation, moreover, teaches us that the rate of discharge of stimuli from the specialized tissues differs not only according to the position of the active region, but also in virtue of influences transmitted through nervous channels, it would be natural to assume that the rate of the heart's contraction will be subservient to the focus whose effective stimulus formation proceeds at the highest rate, and that all areas less actively endowed would, under these circumstances, be submerged.

Such considerations enable us to appreciate some of the fundamental principles which underlie and regulate the speed of the heart's contraction, and it is perhaps unnecessary, in this context, to do more than mention the existence of concrete evidence which proves that the normal beat takes origin in a node of specialized tissue situated at the junction of the superior vena cava with the right auricular chamber, whose rate of discharge in the healthy resting adult is 70 to 80 a minute.

Furthermore, we recognize that the sensitivity and capacity for adaptation, which the normal heart possesses, depends upon a close interaction between the area of stimulus formation and the central nervous system; in other words, the intimate bond of association between nerve and muscle tissue; hence we may with some confidence, approach the subject of disturbed heart rhythm, and incidentally the one at present under consideration, from two separate aspects, 1, the neurogenic, and 2, the myogenic.

NEUROGENIC BRADYCARDIA

We are fully aware that, under ordinary circumstances, the heart rate is maintained in a condition of permanent check by the active intervention of the inhibitory mechanism. The tonic influence of the latter, in balanced conjunction with the opposed sympathetic impulses, has, however, an extensive range of function which renders possible the heart's adjustment to alterations in the physical environment; thus we can account for the rate alterations observable during rest, exertion, emotion, anxiety, fright, etc.; and incidentally we have direct evidence, by reason of the slowing which normally accompanies the expiratory period, of a definitely phasic variability in the tone of the inhibitory mechanism.

The foregoing remarks, though brief, not only enable us to infer that the check imposed upon the heart by the central nervous connections is inconstant in degree, but also suggest that circumstances may arise under which inhibitory effects become so far exalted as to determine slowing of rate to the level of true bradycardia.

From time to time we meet with cases in which bradycardia is a seemingly normal event, and unassociated with any symptoms of physical incapacity

or deficient exercise tolerance. Such patients may display signs of autonomic overaction in varying degree, contracted pupils, asthmatical tendencies, constipation, a cool dry skin, etc., more especially noteworthy, however, in the present context, is the existence of an augmented innervation by the cardiac vagus. In striking contrast, moreover, with certain types of myocardial degeneration to be referred to later, it is characteristic of the socalled normal bradycardia that the slow rate of beat is merely a phenomenon of the resting stage. Ample acceleration comes about to allow of the necessary adjustments during effort, and full release can be procured in the usual fashion by trial doses of atropine sulphate.

It would seem, in other words, that certain persons, notably tall healthy males, will exhibit sure evidence of hypertonus of the cardiac vagus and some authorities, notably Savill, have remarked on the possible hereditary influences which may or may not be operative in such cases. As a result, in great measure of experimental investigations, we know that slowing of the heart beat under vagal stimulation is brought about by a process of focal inhibition whose seat may be the sinoauricular node or the functional tissues connecting the upper and lower chambers.

We are familiar clinically with examples of bradycardia conforming to these types. Sinus bradycardia will present no difficulties, the slow beating of the heart will be the only abnormal physical sign; the electrocardiogram, except for the wide spacing, will be normal as regards the shape and relative sequence of the waves composing the individual complexes; the jugular curve is physiological; subjective symptoms do not exist. That the conception of vagal bradycardia may involve more than a simple slowing of the sinus rate can be proved conclusively by careful study of polygraphic or electrocardiographic curves. In the latter we recognize changes indicative of interference with the normal and coordinate passage of the heart's contractile impulse; some degree of blockage is evinced either in the vicinity of the sinus node itself or in the junctional tissues which connect the upper and lower chambers.

The term sinoauricular block, introduced by Wenckebach, is in itself sufficiently explanatory to need but a minimum of definition; the block, as such, is situated in the higher reaches of the auricular wall so that the sinus impulse fails to extend to the adjoining muscle, consequently a complete intermission of the auricular beat is brought about, and the ventricle, deprived of its normal stimulus from the upper chambers, is likewise silent. For the clinical diagnosis of sinoauricular block some form of instrumental record is essential. The curves are remarkable in that they reveal a disturbance of rhythm which, by analysis, is found to indicate intermission of whole heart cycles; the length of the pause which announces the dropped beat is peculiar in that, as a rule, it is approximately equivalent to that of two normal cycles; in point of fact it is usually just short of this measurement. In addition slight variations in the basal rhythm have been observed (1), the intermission being preceded by some degree of acceleration and followd by a temporary slowing of rate.

A large variety of causes are mentioned in connection with this somewhat rare type of cardiac irregularity; we are familiar with its appearance in the convalescent stages following certain of the acute specific fevers, also as a sequel to digitalis medication, and tobacco poisoning; quite frequently, however, we observe sinoauricular block in patients who present no ascertainable or definite reason for the advent of the disturbance. Fig. 1 is the electrocardiographic curve taken from a patient in whom irregularity of heart action was confined solely to the quickening rate following exertion; the complexes are seen to be normal in conformity and wave sequence, the intermissions were complete, their duration being rather less than that of two of the regular heart cycles; atropine brought about complete vagal release in this patient, also all tendency to the appearance of the irregularity.

Apart, however, from isolated dropped beats, and simple groupings as in the case above mentioned, sinoauricular block occasions a further and rather more striking irregularity in that it determines abrupt changes of heart rate somewhat peculiar in arrangement; these changes will be apparent during the transition stages from the quiet resting rate to the more rapid rhythm, and *vice versa,* a sudden doubling and halving of rate during these processes indicating the functional removal and return of the block at the sinus region. That such is the state of affairs may be surmised by physical examination and pulse counts during the phases between rest and effort, and confirmed in conclusive fashion by graphic registration. Such, in brief, is the usually accepted description of sinoauricular block, but there remains for mention one other specific manifestation of augmented vagal tone, viz., auriculoventricular block. The following case may be mentioned in illustration:

Case.—S. S., aged forty-seven years; seen in consultation by reason of bradycardia; past history included the usual childish ailments. Subjective symptoms nil, physical capacity excellent, active at business and unduly energetic from the athletic point of view; the normal pulse rate was 60, likewise the ventricular. Fig. 2 is a curve obtained from this patient, and portrays clearly the slow sinus rhythm also the delay in the passage from the upper to the lower chambers; the P. R. interval is prolonged, varies somewhat from beat to beat, averaging 0.25 seconds in length; normal acceleration of heart rate was brought about in this patient by effort tests, but the slow rate was resumed with undue rapidity; an injection of atropine produced a rate of 100 in twenty minutes and the electrocardiogram taken at this time showed that the P. R. interval had been diminished to 0.16 seconds.

Such then are some of the effects of vagal augmentation in conditions of health, and our next inquiry relates to a similar happening from causes of a pathological character. These may be conveniently discussed under three main headings: direct, reflex and central.

The direct embraces a somewhat varied group of disturbances which owe their being to a successive stimulation of the cardiac vagus in its course from the medulla. They may be produced by the irritation of new growths and tissue changes in the vicinity of the vagus nerve, or as a result of an actual neuritis. One might mention a large number of morbid states in association with this latter condition, but the better

known will suffice for the present context, and we may instance, under this heading, of vagal neuritis, concrete examples of the lesion as such is produced in poisoning by lead, alcohol, the toxin of diphtheria, etc., and, in addition, those varieties of the disorder which depend upon the spread of inflammatory mischief from mediastinal structures neighboring on the course of the vagus nerve.

Of bradycardia reflexly vagal in origin, we need make but brief comment; that such may occur would seem almost beyond doubt, for evidence from the clinical point of view is at times convincing. We are familiar with the bradycardia sometimes to be noted in gastrointestinal disorders, dyspepsia, gastric ulcer, and new growth, to mention only some of the affections which may set up irritation of vagal nerve endings; probably also the infrequency which occurs in emphysema and certain other pulmonary lesions is due in some measure to reflex irritation from the lungs, hence may find place in the present category. We may, however, note in passing that the whole group of reflex bradycardias is of little significance, except from the experimental point of view, and further that this type of slowing bears little if any prognostic import, the vagotonia is not permanent and the blood pressure readings are unaffected.

The remaining group deals with those varieties of vagus augmentation which are secondary to influences acting centrally on the inhibitory area in the medulla.

A disturbance in the innervation of this latter may be brought about by poisons circulating in the blood stream, and here we may refer to the central slowing brought about by digitalis medication, jaundice, and uremia, also the toxins of typhoid, diphtheria and pneumonia. The bradycardia of jaundice, doubted by certain observers, is none the less definite, and may be ascribed to the agency of the biliary acids. In simple cases these will bring about their characteristic effect via the inhibitory mechanism, and atropine will determine a full release, but the possible effect of these acids directly upon the myocardium should at all times be considered, for the presence of a toxic myocarditis will undoubtedly add to the gravity of the illness and in some measure adversely affect the prognosis. An injection of atropine will settle the question beyond doubt.

The average pulse rates of twenty patients warded for jaundice was 68, and among the records one finds frequent counts between 50 and 60.

The late stages of chronic renal disease, and, more particularly, uremia itself, are characterized by bradycardia with some regularity. The causation is by no means simple; at least two factors would seem to offer an explanation of the increased inhibition viz., the toxins circulating in the blood stream, and the increased blood pressure usually obtaining in these cases, which serves to remind us of Marey's law that, with a normally active inhibitory mechanism, the rate of the heart beat is in inverse ratio to the arterial pressure.

Our reference to vagal bradycardia central in origin may close with a note upon its occurrence in association with cerebral disease; and, for this purpose, one has drawn freely upon the records of hospital cases.

We are led to assume that a slowly increasing intracranial pressure at first causes a slow heart beat. If sudden in onset or extreme in degree the pulse may be rapid, thus we find that a large hemorrhage causes a rapid pulse, a tumor causes slowing in the early stages, but tachycardia at the end.

Interference with the cerebral circulation, as may occur from causes such as endarteritis, thrombosis, or embolism, may be sufficient to cause bradycardia, and irritation of the base of the brain, as in meningitis, is responsible, in the early stages of the disorder, for a similar result.

MYOGENIC BRADYCARDIA

A brief explanatory note may, with advantage, prelude discussion of this group of socalled myogenic bradycardia, and incidentally define its limits.

We are forced to recognize the very intimate association between nerve and muscle tissue which exists in cardiac structures at all times, and, in theory, it is impossible to divorce the one from the other, but, from the practical point of view, a broad separation would seem to be helpful, hence the existence of the present group, and the neurogenic which precedes it.

Certain types of bradycardia appear to overlap both neurogenic and myogenic groups; such for instance as that observed in convalescence from acute disease, in athletes, pregnancy, and other conditions. In the present context, however, we shall refer more especially to the condition as it arises in association with pathological states affecting the myocardial structure, in other words, those varieties of intrinsic heart disease in which slow beating is a prominent feature.

The first type of the disturbance which claims our notice is heart block, a somewhat descriptive term indicating the presence of an obstructive interference with the passage of the contractile impulse from the upper to the lower chambers; in varying degree the auricle and ventricle become dissociated, and this to the obvious disadvantage of the latter and the arterial system generally.

Our earliest authentic records of clinical heart block were made approximately a century ago. In 1827 Adams (2) published in full detail the notes of a case—a male aged sixty-eight who was subject to oppression of breathing and obstinate cough; the pulse was slow, thirty a minute; recurring attacks, apoplectiform in type, were frequent (of these there were twenty in seven years) and the heart rate at these times became slower than usual. Death followed one of the attacks; the heart was found to be fatty; there was no mention of the coronary arteries.

In 1846 Stokes (3) recorded a similar type of case. In his patient the pulse rate was 28, epileptiform seizures were frequent, usually lasting four to five minutes; fifty such attacks were noted during the last three years of this patient, and finally he succumbed in a paroxysm of unusual length.

Numerous reports of similar cases followed, and the pioneer observations of Adams and Stokes were amply confirmed. The dissociated action of the auricle and ventricle was explained as being the outcome of widespread degenerative processes in the myocardium, in fact as late as the early part of the present century the actual pathology of heart block

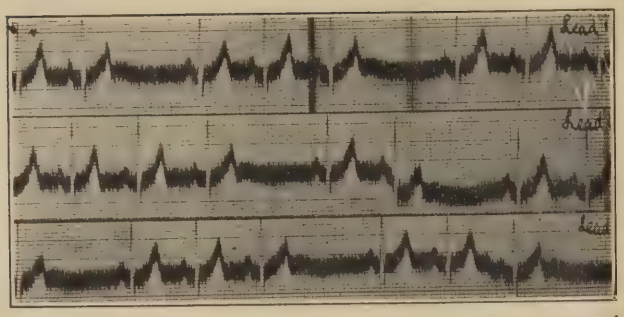

Fig. 1.—Sinoauricular block; the complexes are normally composed in each lead; frequent intermissions occur, the pauses approximating in length that of two normal beats; the intermissions are complete, involving both upper and lower chambers.

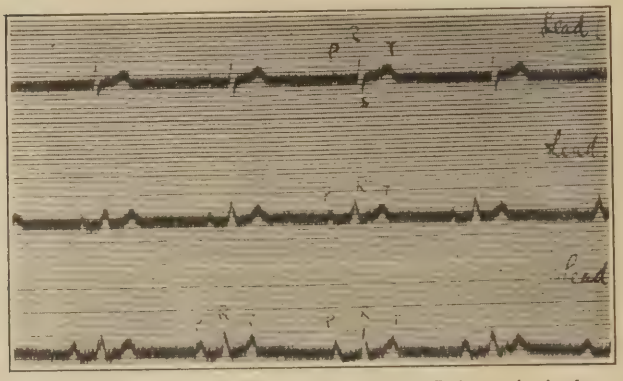

Fig. 2.—Vagal heart block; prolongation of P-R interval; the latter varies in length throughout the curves ranging from 0.22-0.28 sec.

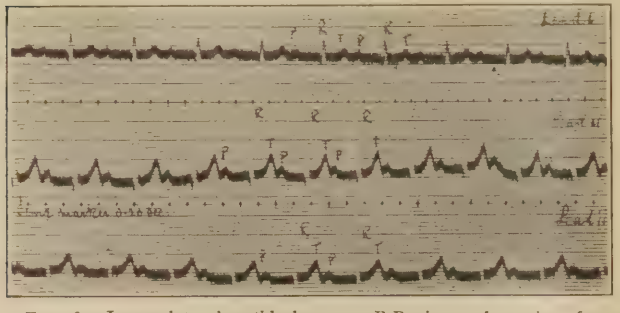

Fig. 3.—Incomplete heartblock; pre P-R interval varies from 0.36-0.40 sec.

was still imperfectly understood, and the current opinion continued to be accepted. In 1903 Osler (4) reviewed the whole subject, and published a series of cases of heart block. The intricate detail of his clinical observation was characteristic, also his deductions from the inperfect data of which he was then possessed. The pathology was lacking in some measure, however, for the minute anatomy of the heart was, at that time, undergoing revision and new facts with regard to its structure had not then received ample recognition. The now wellknown auriculoventricular bridge, described by Stanley Kent and His in 1893, was already attracting attention about that time; but its full function, structure, and ramifications were imperfectly divined until the publication of Tawara's description in 1906 which went far to simplify the existing conceptions. The later evolution of our knowledge with regard to heart block was largely aided by experimental study, in which context we might mention the work of Gaskell on the frog's heart, and that of Hering and Erlanger on the mammalian organ. The full appreciation of the whole subject, as we at present accept it, depends however upon the illuminating researches of modern observers, and especially would one mention the graphic studies by Lewis, Mackenzie and others.

Briefly we may summarize the outcome of all this combined evidence by recognizing the necessity of functional conductivity in the neuromuscular bundle which unites the upper and the lower chambers of the heart, and acknowledging this specialized tissue to be fundamentally essential to an associated action on the part of the auricles and ventricles.

By the term heart block therefore we define that condition in which the conductivity of the bundle is impaired, or wholly abolished; the causes which experience leads us to associate with such a happening include such conditions as the following:

1. Inflammatory exudation, hemorrhage, or cicatrization in the neighborhood of the bundle occurring during the course of acute infections, rheumatism, and such like maladies associated with pyrexia.

2. New formations, gummata, vascular growths, tumors and others.

3. Chronic interstitial fibrosis, the end result of long standing coronary sclerosis or actual thromboses; it would moreover be natural to assume that varying grades of block may be anticipated depending upon the intensity of the underlying pathological process, hence we appreciate the advantage of separating heart block into two main classes, a, the incomplete and b, the complete.

INCOMPLETE HEART BLOCK

In this condition the functional continuity of the auriculoventricular bundle, though depressed, is not wholly destroyed; the ventricle continues to be subservient to impulses from the auricle which descend by the normal route, the block as such being proclaimed by the undue length of time which the impulse takes in passing from the auricle to the ventricle (Fig. 3), and, at a more advanced stage, by the failure of certain impulses to reach and activate the ventricle. The former (delayed transmission) can rarely be recognized without instrumental aid, some graphic record which will inform us of the time elapsing between the onset of systole in auricle and ventricle, hence the value of noting the lengths of the a—c interval in the jugular curve (normally 0.2 second) and of the P. R. interval in the electrocardiogram (normally 0.14-0.18 second). Under certain circumstances we may suspect this early grade of heart block by auscultation alone; the auricular contraction may become audible by reason of its abnormal separation from that of the ventricle and, in so doing, give rise to reduplication or splitting of the first or second heart sound. For a similar reason the seat of murmur, if such be present in diastole, may undergo change of position in the cardiac cycle. The second variety, in which certain of the impulses fail to reach the ventricular chambers, is accompanied obviously by intermissions of beat and irregular bradycardia in varying degree; occasional intermissions are signalled by characteristic alterations in the grade of conduction of the bundle, thus we find that the ventricular silence is preceded by a gradual lengthening up to the time of the intermission, and it is usual to notice that, sub

sequent to this latter event, the passage of the stimulus to the ventricle is definitely facilitated. As the lesion progresses the intermissions become more frequent and simple ratios become established between the rates of the auricle and the ventricle, the latter responding to every second, third or fourth impulse from the upper chamber. The lesser grades of block are unlikely to be accompanied by any special symptoms, but the later stages are by no means so exempt. By reason of the tendency of the block to become complete from time to time we have cause to expect cerebral manifestations, transient giddiness, syncopal and epileptiform attacks, secondary no doubt to the temporary deficiency in the blood supply to the higher centres.

The progress of heart block from its incomplete stage to that we describe as complete is usually associated with excessively numerous cerebral seizures and we may reasonably expect the number of these latter to diminish somewhat when, with complete block established, the ventricle has definitely assumed its own inherent rhythm.

In conformity with the scale of irritability laid down for the cardiac musculature (5) we know that the idioventricular rhythm is extremely slow—usually about thirty a minute. Further, we realize, by clinical experience, that this low rate of beat is unstable and likely to be reduced without warning. It is at the times of further reduction in rate that the socalled cerebral manifestations of complete heartblock come about. A slowing of rate to 8 to 20 a minute will as a rule precipitate syncope, and a ventricular standstill of sixteen or more seconds will give rise to convulsions. Apart from these latter we must be prepared to recognize certain special phenomena in the general symptom complex of complete heartblock; the patient will complain of weakness, shortness of breath, giddiness and persistent fatigue in between the fits; he will notice that his field of response is very materially limited, and that even the slightest effort is likely to be fraught with serious results.

The normal heart rate accelerates in compensatory fashion as the result of exercise or effort and following the injection of atropine, or the inhalation of amyl nitrite. None of these influences have any appreciable effect on the idioventricular rhythm. Dispossessed almost entirely of its natural elasticity, the heart in cases of complete block becomes a highly inefficient organ; the slowness of the rhythm renders existence impossible except at the lowest vital level, and if this is not exceeded, the outlook need not be regarded in too gloomy a fashion. We know that the ventricular power, in the presence of heart block, is capable of dealing with the added strain which the long diastole and consequent overfilling impose upon the organ; the pulse pressure is exaggerated, the systolic reading is high,[1] and together these indicate strength of cardiac contraction and an adequate degree of filling and emptying on the part of the organ. Curves and tracings of complete heart block indicate the absolute dissociation

[1]In contradistinction one might refer to the bradycardia so frequently observed in cases of myxedema and hypothyroidism where, in consequence of functional sluggishness resulting from lowered basal metabolism, the pulse pressure is small, the systolic blood pressure low, and the volume outflow diminished.

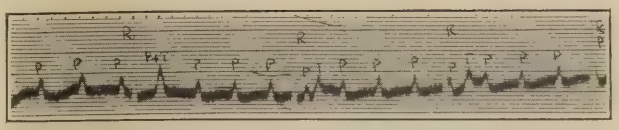

Fig. 4.—Complete heart block; note the regularly recurring auricular waves and the independent ventricular complexes.

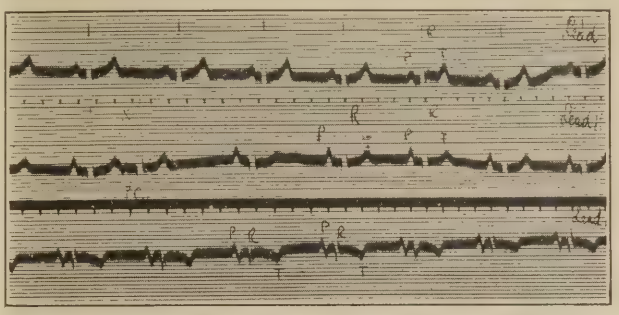

Fig. 5.—Bradycardia; normal sinus rhythm, disturbed at x in lead ii by the occurrence of a premature auricular contraction; the three curves taken together, especially the conformity of the Q.R.S. complex in lead iii, suggest a transversely placed heart.

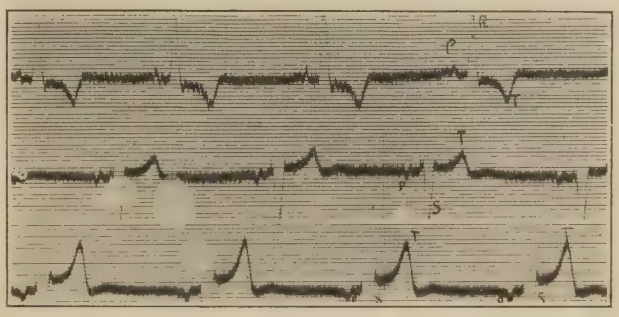

Fig. 6.—Sinus bradycardia; left ventricular preponderance.

between auricle and ventricle; the two chambers pursue their own rhythm in independent fashion, a fact that can usually be best appreciated by electrocardiograms (Fig. 4), but in certain instances we must expect difficulty in the differentiation between complete and incomplete block by these methods. It may seem that some varying degree of relation still exists between the auricular and ventricular contractions. In such circumstances we may try the effect of an inhalation of ammonia which will raise the auricular rate (6) but produce no effect upon the ventricular rhythm.

The next variety of intrinsic bradycardia to engage our attention is that associated with chronic myocardial degeneration. For the present purpose we need not separate the latter but, viewing degenerative processes in collective fashion, we may, with advantage, discuss the undoubted tendency to slow action which patients with advanced myocardial lesions are prone to evince.

As age advances a widespread tissue fibrosis tends to develop, and the reserve of elasticity and resilience becomes appreciably curtailed. The effect of this senile degenerative process upon the myocardium has been ably discussed by Wilson (7), and later Willius (8) has made interesting reference to the subject; the inferences of the latter observer led him to the following conclusion: "Diminished elasticity implies diminished amplitude of contraction favoring underfilling and decrease volume outflow. To favor greater filling of the heart, rate is slowed,

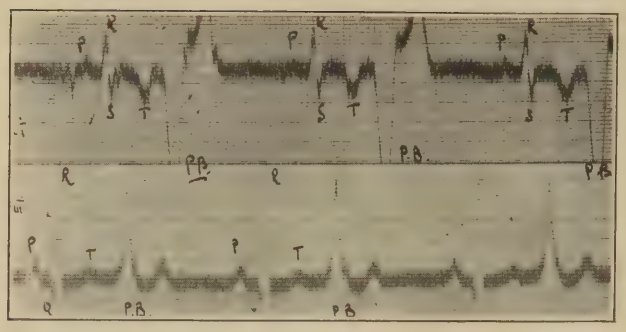

Fig. 7.—Arrhythmia of the coupled variety, each normal complex being followed by an atypical wave sequence (P.B.) indicating an ectopic impulse formation in the ventricular architecture.

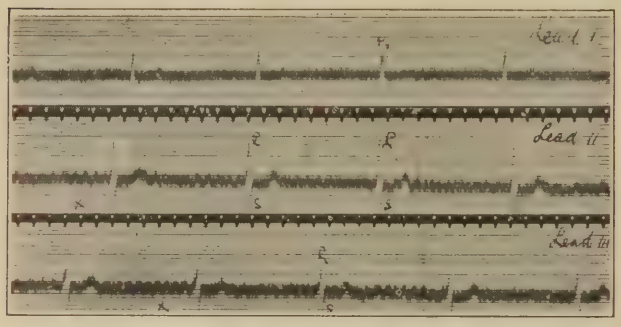

Fig. 8.—Bradycardia; note the absence of normal P. waves, also the regularity of the ventricular action, and the appearance from time to time (x,x) of regularly recurring and continuous oscillations indicative of auricular fibrillation.

thereby diastole prolonged. If this train of events progresses without increasing contraction amplitude, volume outflow becomes reduced to the point where the syndrome of cerebral anemia occurs. This reaction explains those cases presenting the Adams-Stokes syndrome unassociated with lesions of the auriculoventricular bundle and in which vagus augmentation is not present as determined by atropine response."

CITATION OF CASE MATERIAL

The brief notes of three cases at present under observation may be quoted in illustration.

Case II.—E. C., aged sixty-eight, male. Complained of giddiness, rapid exhaustion and inability for even moderate effort; circulation poor, felt the cold intensely and was unable to get pulse above 60. The physical signs were: Heart enlarged; rhythm irregular by reason of occasional premature contractions; sounds clear; no valvular disease; vessels thickened; blood pressure 180 systolic, 110 diastolic; jugular engorgement and hepatic stasis; the electrocardiogram showed a normal sequential rhythm at a rate of 60, with premature contractions left ventricular in type, and left sided preponderance. The reaction to effort was poor, and inhalation of amyl nitrite was without effect upon the heart rate. Myocardial degeneration and insufficiency were assumed.

The three cases are quoted as typical examples of bradycardia secondary to intrinsic degeneration of the cardiac musculature; one would especially remark upon the impoverished field of response in such types of patients, their tendency to elevation of blood pressure, the constancy of the slow action, and the lack of response to drugs which, under normal circumstances, produce an accelerated rate of beat.

In concluding our reference to bradycardia in association with myocardial degeneration a brief note must be inserted to deal with the comparatively rare form of the disorder which depends on a shift of the impulse formation from the sinus node to the junctional tissue.

The law of the cardiac musculature (5) assumes that the nodal tissues, from the point of view of inherent impulse formation, occupy a position between the moderately fast rhythm of the sinus node and the slow rate of the idioventricular rhythm; for obvious reasons therefore we may expect the junctional tissues to take over control of the cardiac rhythm if, for some cause, the sinoauricular node is in abeyance. Experimental investigation has assisted, in great measure, to develop our conception of nodal rhythm and our clinical deductions become proportionately more valuable. The condition as such was first recognized by Englemann (9) by means of the first Stannius ligature experiment in the frog, later produced by Lohmann (10) in the mammalian heart and finally confirmed by Meek and Eyster (11), who proved the automaticity of the auriculoventricular node by the method of initial activity. Our present conclusions with regard to the etiology of nodal bradycardia may be comprised under three headings (12):

1. Experimental nodal rhythm, as produced by cooling at the sinus region, stimulation of the vagus or accelerator nerves, forced respiration, or drugs including atropine, ether, digitalis, and veratrine.
2. Transitory nodal rhythm, as observed in acute diseases, diphtheria, scarlet fever, typhoid fever, or infective endocarditis.
3. Permanent nodal rhythm.

The clinical diagnosis of the condition will depend almost solely upon an interpretation of electrocardiographic curves; in these we find an altered relationship between the waves indicative of the respective activities of auricle and ventricle. As one would expect the upper and lower chambers receive their impulses more or less simultaneously if the node is directing the heart rhythm, whence we must be prepared to find R and P in abnormally close apposition; in point of fact the position of the P wave varies considerably, thus we may recognize it immediately before or after R, or on the other hand entirely submerged in this latter; in certain cases the position of P is noticed to vary from beat to beat, and it is suggested that this disturbance is due to a migration of the pacemaker within the actual confines of the nodal tissue (13).

The P wave moreover is usually abnormal in shape as a result of the ectopic focus of impulse formation, but the ventricular complex is of usual form for the stimulus passes downwards by the normal channels.

Premature contractions frequently distort the curves of nodal bradycardia, and we are safe in assuming that the actual foundation of the rhythm is extremely insecure. In this context we may refer to a case reported by Fussell and Wolferth (14) in which there was a constant shifting of the pacemaker back and forth between the sinus and auriculoventricular nodes, and when we consider that the rates of stimulus production in the two centres are

moderately close, it would seem likely that Laslett's (15) suggestion of variations in vagal tone as the important factor in the shift might very reasonably be adopted.

DIFFERENTIAL DIAGNOSIS

A considerable number of cases present no difficulty of any appreciable degree, and can be readily elucidated by simple methods; more especially does this apply to those types of bradycardia in which simple vagotonia happens for some reason to be established, for we can, at will, eliminate this inhibitory effect; but we must remember that complicated lesions are possible and that myocardial degenerative changes, heart block, enlargement, fatty degeneration, etc., are themselves sufficient to allow of and invite an increased vagal influence.

Though by no means essential in every case that comes before us, electrocardiography will prove of inestimable value in determining the possible intricacies which the slow heart beat presents; it enables an accurate understanding of the course and rate of propagation of the contractile wave in the cardiac musculature, points out abnormalities in the shape of bundle lesions, ventricular preponderance, diminished T waves, and other such evidence of myocardial degeneration, and incidentally defines irregularities of beat in decisive fashion. We may positively affirm that heart block in its early stages cannot be diagnosed without instrumental methods, and stress particularly the advisability for their usage in confirmation of the same event in its complete development; in this connection three cases may be mentioned where an alteration of rhythm was the chief physical sign.

Case III.—A healthy male, aged thirty, with no evidence of cardiovascular disease, whose only objective sign was a slow heart beat, irregular in that the rhythm was coupled; after exercise the rhythm became regular for a short period. The diagnosis seemed to rest between heart block, in which every third auricular impulse failed to reach the ventricles, and premature contractions alternating with each normal beat; the electrocardiogram (Fig. 7) showed that the latter was the correct interpretation.

Such[1] is a typical example illustrating that graphic methods go far to clear up the etiology of doubtful cases, and ably assist our ordinary routine methods of physical investigation; that these latter will need to be comprehensive is certainly obvious for bradycardia is known to be produced by so many widely differing states. We must endeavor to separate the neurogenic from those myogenic in type, and not forget in so doing that the latter are quite likely to be themselves accentuated by excessive inhibitory control; further we must attempt to estimate in some measure the significance, from the diagnostic point of view of the several members of the two main groups. This may be accomplished by a careful inquiry into the symptoms, the field of response to effort, the past history, and, what is perhaps even more important, the coexisting physical signs of disease such as acute infection, toxic poisoning, increased cranial pressure, or some of the other several lesions mentioned above. The specific diagnosis of bradycardia with an irregular rhythm will probably require the adoption of graphic methods, and heart block cannot be efficiently investigated without their aid. In conclusion, reference may be made to the value of atropine in the diagnosis of doubtful cases of bradycardia, the presence or absence of reaction following vagal release being, as was previously mentioned, of much practical worth in the correct appreciation of gross myocardial degenerative changes.

[1] Other cases cited by the author were omitted due to lack of space.

TREATMENT

In certain people the heart rate though naturally slow at rest is compatible with full health and vigorous vitality; obviously no treatment is indicated in these cases. Where, however, the condition renders itself significant active interference must be considered, and especially does this apply if the underlying cause can be elucidated. The simple bradycardia of convalescence may be treated on general lines which aim at raising the general nutrition, and incidentally that of the cardiac nerve trunks and musculature. Where toxins or extraneous poisons are in evidence an attempt should be made to antagonize their action or cut short their course, for we have observed how comparatively frequent is the bradycardia secondary to faulty innervation by irritation affecting the vagus nucleus, trunk or intracardiac endings. The correct treatment will depend upon the underlying cause in these types of cases, whether it be medullary poisoning by digitalis, bile salts, the toxins of uremia, or neuritis of the vagal trunk secondary to diphtheria, alcohol, lead or some such other cause in the same category.

Where the bradycardia is reflex in origin a good effect may follow the prescription of bromides, and if the condition is urgent we may have recourse to atropine or belladonna.

Antisyphilitic treatment in appropriate cases, e.g., myocardial degeneration and heart block, should be vigorously employed.

With evidence of raised tension, if this latter seems either causal or aggravating to the slowly beating heart, nitroglycerine, or the other nitrites should be given in trial doses; diffusible stimulants, camphor, alcohol, ether, ammonia, etc., should be given to counteract and ward off giddiness, faintness, and any tendency to an increase in the habitual slowing of the pulse.

Acute cases must be treated by general methods as for shock, complete rest with the head low, warm applications, caffeine, diffusible stimulants, atropine, etc.

Thyroid extract would appear to be indicated in cases of bradycardia by reason not only of the increased blood output per beat which it promotes, but also because it raises the rate of metabolism, and the threshold of myocardial irritability.

This drug may be worth a trial in such varieties of persistent bradycardia as are due to advanced myocardial degeneration, also in the presence of complete heart block, moreover the latter lesion does not contraindicate the prescription of digitalis or its allies; but one must admit that little indeed is the amount of tangible improvement in function that can be produced in the action of the ventricle when completely dissociated by disease from the upper chambers of the heart.

In conclusion we may mention the curative value of adrenaline and the beneficial effects which may result from the prescription of this drug in cases of bradycardia, heartblock, and similar conditions.

Phear and John Parkinson (16) have reported the notes and clinical details of a patient suffering from complete heartblock, whose seizures vanished entirely under adrenaline medication, and, assuming this to be due to stimulation of the sympathetic system, they quote in confirmation the evidence of experimental investigation which not only demonstrates the accelerating effect of adrenaline upon auricular and ventricular rhythms, but also would seem to prove that the drug has power to remove or modify heart block produced experimentally, and that therefore we possess in adrenaline an agent of the utmost value for the treatment of the ventricular standstill which determines the seizures of heart block.

The author's references will appear in his reprints.

The Significance and Consequences of Hypertension*

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New York

Although hypertension is one of the commonest conditions encountered by the physician in his practice, it is still one of the unsolved problems of medicine. Because of the fact that we are ignorant of its ultimate cause, the classification of the various disease entities, in which hypertension is the leading symptom, remains unsatisfactory. A clear understanding of the significance of hypertension must be based on a knowledge of the physiology of the cardiovascular apparatus, in particular of those factors which determine the level of the blood pressure and its variations. I shall, therefore, begin my remarks with a brief survey of the most important physiological factors that are concerned in the maintenance of the blood pressure.

With each systole, a part of the volume of blood ejected from the heart crowds out of the arterial system an equivalent amount of blood; the other part, finding no avenue for escape, distends the elastic wall of the aorta until it, in turn, can escape to the periphery. Because of its inherent elasticity, the stretched arterial wall tends to return to its original state, it is under tension. This is known as the arterial tension and is equivalent to the pressure of the blood within the vessel. Thus the arterial tension and the blood pressure represent the same force. The greater the resistance to the outflow of blood to the periphery, the greater will be the distention of the large vessels, so that one may say with Lauder Brunton that "the arterial tension results from the difference between the amount of blood discharged from the heart into the arterial system, and that which passes from the arterioles into the veins" and with Marey that "the arterial tension is a force created by the ventricular contraction, maintained by the reaction of the bloodvessel walls to their distention, and regulated by the resistances offered by the peripheral vessels to the outflow of blood."

It is apparent, therefore, that the blood pressure is determined by a number of factors: the systolic output and the rate of the heart, these two together giving the minute volume output of the heart; the elasticity of the arteries; the peripheral resistance; the volume of the blood in the whole arterial system and the viscosity of the blood. Because of the intermittent pumping action of the heart, one must further distinguish between the systolic and the diastolic blood pressures. During systole, the phase of cardiac ejection, there is a sudden rise in the blood pressure. This is known as the systolic blood pressure. It is determined chiefly by two factors, the volume output of the heart, and the elasticity of the large arteries. During the diastole of the heart no blood is being forced into the aorta. On the contrary, blood is constantly flowing to the periphery and from the arterioles into the venous system. The pressure within the vessels during this phase is known as the diastolic blood pressure. It is determined chiefly by the peripheral resistance to the outflow of the blood. The peripheral resistance is determined by the tone or state of contraction of the arterioles and probably of the capillaries as well.

With each systole, the heart, in order to open the semilunar valves and discharge its contents into the aorta, must generate a force greater than that represented by the diastolic blood pressure. The latter, therefore, is a measure of the constant load under which the heart is laboring. The systolic pressure is a measure of the force resultant from the volume of the cardiac ejection and the elasticity of the large arteries. It is important, therefore, in all blood pressure studies, to record both the systolic and diastolic pressures in order to obtain a complete understanding of this aspect of the dynamics of the circulation.

It is selfevident from this analysis of the factors that determine the blood pressure that in any person it is not a constant static force, but that it varies from moment to moment, depending on the variations in the elements that determine it. Thus, it is well known that the systolic output of the heart, as well as the heart rate, are constantly changing and that the peripheral resistance is likewise variable. Consequently the blood pressure too is constantly undergoing alterations of level. Most of these are strictly physiological adaptations of the circulatory apparatus to the needs of the body. A thorough understanding of these variations and of the phenomena by which they are determined is essential to an intelligent evaluation of sphygmomanometric readings in the clinic.

It will be found in the majority of cases that when repeated blood pressure estimations are made at short intervals, the later readings show a lower systolic pressure than the earlier ones. The difference between the first and the last readings in a normal individual may be as much as 30 mm. The final read-

*Read before the New York Physicians' Association, April 23, 1924.

ing, when the pressure has become established, is the most accurate measure of the blood pressure and is called the residual pressure. Ordinarily four or five readings in the course of ten minutes are sufficient to determine the residual pressure. There are two causes for this phenomenon. First, the general excitement or apprehension of the patient, or slight bodily exertion preceding the test, will cause a general elevation of the blood pressure. Second, as MacWilliam and Kesson have shown, if the artery is in a state of contraction, it will offer considerable resistance to compression by the air cuff and thus give a false high reading. Repeated compression, however, will relax the vessel, so that the final readings will be lower and more representative of the true arterial pressure. The importance of local vasomotor reactions has been demonstrated by Galli, who found that when the cuff was inflated with hot air, alternating with cold air, the blood pressure sometimes varied by 40 mm. Addis has brought out clearly the degree of variation of blood pressure that may occur under different environmental conditions. He measured the blood pressure in a series of normal young men first early in the morning, when they awakened, and before they arose (basal conditions), and then during the day when they were quietly up and about. The averages were: under basal conditions 99/71; in the day time 127/78. Arteriosclerosis rarely is of sufficient degree to interfere with the accuracy of the readings. If the artery is completely calcified, as in a case that recently came under my observation, it may be impossible to obliterate the vessel.

The difference between the systolic and diastolic pressures is known as the pulse pressure. Thus, if the blood pressure is 120/80, the pulse pressure is 40. Normally the systolic and diastolic pressures bear a certain relationship to one another, and therefore the pulse pressure, as an expression of this relationship, is of value. The following formulas give a rough and ready appproximation of this correlation:

$$\text{Diastolic pressure} = \frac{\text{systolic pressure}}{2} + 10$$

In cases of marked hypertension one must add 20 to the right side of the equation:

$$\text{Diastolic pressure} = \frac{\text{systolic pressure}}{2} + 20$$

Marked variations from this ratio are significant of the operation of some pathological factor and are of value in diagnosis.

As a practical illustration let us take three patients all of whom have the same systolic pressure, but different diastolic pressures. Here is one whose pressure readings are 160/90. This represents a slight hypertension with a normal relationship between systolic and diastolic pressures, according to our formula. The readings of the next one are 160/120. Here we have a very high diastolic reading accompanied by a systolic reading that is relatively low. It represents, as we shall see later on, a patient with marked hypertension whose heart has become insufficient. The third patient has a reading of 160/50. He has aortic insufficiency, with only a systolic hypertension from the increased cardiac output and a low diastolic pressure. If we had used the systolic pressure alone as a guide, the essential differences between the cardiovascular disorders of these three patients would have escaped us. Yet each patient demands different treatment.

Many attempts have been made to arrive at figures representing the normal range of blood pressure in adults. The difficulties bound up with such an attempt are manifold. It is necessary to accumulate a very large number of readings which means that many examiners must contribute their observations. This introduces the factor of the variability of the measurements by different individuals, as well as those due to the fact that the readings are not taken under absolutely uniform conditions. A survey of all of the work that has been done along these lines makes it appear that for practical purposes we may accept a systolic pressure of 130 for men and 127 for women, as the upper limit of normal. In patients over fifty-five years of age, 140 may be considered as the upper limit of normal. For the diastolic pressure 90 may be taken as the maximum figure for normal adults. It is apparent therefore that the former view that the blood pressure advances significantly with the age of the patient, which gave rise to the formula that the blood pressure at any age may be arrived at by adding 100 to the age in years is inaccurate. The rise with age is real but it is slight. Interesting as well as significant is the observation of Symonds that in all age groups the heavier subjects on the average have higher blood pressures.

Of what practical value to us as practising physicians is a knowledge of the facts which we have been discussing. One of the most important points is the demonstration of the variability of the blood pressure and the necessity for determining the residual pressure as the true pressure. This simple precaution will prevent us from assuming the presence of hypertension when it does not exist, and will make us cautious in interpreting drops in pressure reaching even as high as 25 mm. as significant and attributable to the particular therapeutic regimen we may happen to have prescribed in a specific case.

Assuming then that we have taken all of these facts into consideration, and that the patient presents a real elevation in blood pressure. What is the significance of such a finding? The question as I have put it is too simple. Before we can give an answer, we must know whether it is the systolic or the diastolic pressures or both that are abnormal. We must know whether the elevation is temporary or permanent; we must know something about the condition of the heart and arteries.

Systolic hypertension.—By this term we mean an elevation of the systolic pressure with little alteration of the diastolic pressure. An increased output of the heart, by increasing the elastic distention of the wall of the aorta, will elevate the systolic blood pressure. The diastolic pressure will remain unchanged unless there is an alteration of the peripheral resistance. Such a condition is seen after exercise and in patients with exophthalmic goitre. In aortic insufficiency the volume of the systolic ejection is increased because of the leaking valve, and here, too, one observes a high systolic pressure, but because of general dynamic changes in the blood circulation, diastolic pressure in these cases is abnormally low.

On the other hand, a loss of elasticity of the aorta

and the large vessels derived from it will also tend to elevate the systolic pressure and leave the diastolic pressure undisturbed. In this case the aorta cannot distend to accommodate the volume of blood ejected from the heart, it has no give. As a consequence with systole the pressure within the aorta suddenly rises very steeply, the blood is rapidly forced to the periphery, so that the pressure rapidly falls and the diastolic pressure is unchanged or even low. Thus extensive atherosclerosis of the aorta, which is so common in older individuals, is often accompanied by a raised systolic pressure with a normal diastolic pressure. The fact has not received sufficient attention and is worthy of note.

Similar readings may be obtained in certain patients with bradycardia. The long diastole allows a greater amount of blood to flow from the arteries to the veins, the arteries become comparatively empty and, consequently, the diastolic pressure is low. The systolic pressure is unchanged. For instance, in a patient with complete heart block and a rate of 40, but no valvular lesion, the blood pressure was 130/40. In another patient in whom periods of block alternated with periods of normal rhythm the pressure, when the rate was 76, was 200/100, when the rate was 36 it was 200/70. The last reading is identical with what we have called systolic hypertension; although its mechanism is quite different, it is really a diastolic hypotension.

Transient hypertension.—Transient hypertension may be due to vascular crises, as they were called by Pal, or may be of sufficiently long duration, that the term crisis is no longer applicable. Some of the diseases commonly associated with transient hypertension are certain forms of angina pectoris, tabes dorsalis, eclampsia, and lead poisoning. In all of these conditions the high pressure is paroxysmal, accompanying an acute attack of angina, a gastric crisis, an eclamptic seizure, or lead colic. In the intervals between the attacks the pressure is normal. It is evident that in these cases the sudden elevation of pressure is determined by a constriction of the peripheral vascular bed. Increase in pressure will therefore be manifest in both systolic and diastolic pressures.

Acute nephritis, particularly glomerulonephritis, such as is seen following scarlatina, is usually accompanied by a rise in both systolic and diastolic pressures. The same holds true of the toxic nephritides of pregnancy. Most of these patients recover completely from their nephritis and with this the blood pressure sinks to normal.

Persistent hypertension.—Here we have quite a different picture. Under this caption come patients with socalled essential hypertension, and with the hypertension accompanying chronic nephritis. Although in isolated cases the vascular pressure relationships may return to normal, such a sequence is the exception, not the rule, so that as a descriptive term, we may use "persistent hypertension."

Let us first turn our attention to that class of patients who are conventionally classed under the category of essential hypertension. They form by far the largest group of all patients with elevated blood pressure. Of the ultimate cause of their disorder we are largely ignorant, but we have learned a good deal about the natural history of their disease. As I shall endeavor to show their primary physiological disturbance, and in them the functional disorder long precedes any anatomical changes in the organs of the body, consists of a narrowing of the peripheral vascular bed, due to an increased state of contraction of the arterioles and possibly of the capillaries. This arteriolar contraction may be visualized as an increased state of tonus in which the arterioles, although anatomically normal, are set, so to speak, in the position of partial contraction. Yet with this their sensitivity or that of the nerves that control them is greatly increased, so that they undergo great variations in calibre under altered environmental conditions. This variation of calibre results in a parallel variation of the peripheral resistance, and so leads to a marked instability of the blood pressure.

The clinical picture then of a patient with early essential hypertension can be readily visualized. The patient who has usually passed his forty-fifth year is often overweight because, for some undetermined reason, hypertension is associated with obesity; in women the condition is often discovered at the menopause. The hypertension which is usually discovered accidentally, is of no very great degree, maybe 175/95. There is no cardiac enlargement and no evidence whatsoever of renal disturbance. If we observe such a patient over a long period of time, possibly for months or years, and if we measure his blood pressure at different times of day under varying conditions, we shall learn that it is undergoing constant and great fluctuations. Early in the morning the pressure is apt to be low; in the afternoon it is high. Emotional upsets and mental strains are quickly reflected in a rise in pressure. It is the systolic pressure in particular that is labile. It is in these patients that we see apparent cures with particular frequency. We find that under treatment, or following an acute intercurrent infection, the pressure at times returns to normal. But in many such cases the drop is only temporary. In the course of weeks and months the pressure again rises and the former clinical picture is repeated.

This state of affairs may continue for five, ten or even twenty years without much change and with few symptoms. More often, however, there is a slow but steady tendency of the pressure to rise to higher levels. With this it gradually becomes more stable; the fluctuations are no longer so extreme and normal figures are rarely approached. It is at this stage that we see diastolic readings of 105 and over and systolic readings over 200. Now the patient has arrived at the stage of fully developed hypertension, as we usually think of it. Hypertrophy and dilatation of the heart, with possibly relative mitral insufficiency, have become manifest, and certain subjective complaints have put in an appearance. Most important among these are headache, vertigo, shortness of breath, and possibly slight swelling of the feet. Even with this degree of hypertension the patient may survive many years.

Let us again ask, "What is the significance, and what are the consequences of such a hypertension?" The true significance of a persistently elevated blood pressure is still ill understood. Of its immediate cause we know very little. That hereditary factors play a very important rôle is becoming more and more apparent. Weitz has recently published a very interesting study of the families of eighty-two pa-

tients with hypertension. He found that in these families deaths from apoplexy or heart failure among the parents of the persons examined were much more common than in a control series; and that the parents of the hypertension series died at an earlier age, indeed few of them reached old age. He measured the blood pressure of ninety-three brothers and sisters of forty-two patients with hypertension and found in them a much higher percentage of hypertension than in a series of random controls. Of the brothers and sisters who were over fifty-five years of age, fully one half either had hypertension or had already died from its effects. We all have encountered instances of familial hypertension, but this study of Weitz adds a new significance to such chance observations. There must be some form of hereditary constitutional predisposition.

Aside from this factor, and from those isolated but suggestive cases of hypertension associated with a disorder of one of the glands of internal secretion, our understanding of the cause of hypertension is still very much circumscribed. We have learned, however, that many factors which were formerly held responsible for hypertension have nothing to do with its causation.

Atherosclerosis, sclerosis of the larger arteries, stands in no constant relationship to high blood pressure. Commonly, patients with the most advanced changes in the aorta, coronaries, and large peripheral arteries have normal or even low blood pressures. Some will show the systolic form of hypertension which we mentioned earlier in our discussion, but this is of an altogether different character. On the other hand, disease of the arterioles is an almost constant accompaniment of long standing hypertension. We do not, however, regard this arteriolosclerosis as the cause but rather as an effect of the elevated blood pressure. The arteries of these patients are undoubtedly under a much greater strain than those of normal persons. They react to this strain first by hypertrophy. In vessels of the elastic type it is the elastic tissue that increases in amount; in vessels of the muscular type it is the muscular media that hypertrophies. These changes are followed by secondary degenerative changes which may result in markedly diseased arterioles and interference with the blood supply of the tissue nourished by them. Yet this arteriolar disease is not universal; the vessels of the cutis and of the skeletal muscles suffer little damage. It is the arterioles of the kidney, spleen and pancreas and less often those of the intestine that are involved in this process. There must be added local factors which determine the selective localization of the arteriolar lesions.

This leads us to a consideration of the relationship of kidney disease to hypertension. In the cases of essential hypertension which are under discussion kidney damage is as a rule of little clinical importance. It is true that in almost every case some of the arterioles show sclerotic changes with subsequent fibrous replacement of the glomeruli which they supply, as well as of the tubules supplied by the efferent arteriole of the glomerulus, but in most instances there is so much healthy kidney tissue left, the margin of safety is so great, that the lesions are of no clinical importance. Moreover, the scarring of the kidney progresses so slowly that in most cases long before enough kidney tissue is destroyed to jeopardize the life of the patient, he has succumbed to cardiac failure or to cerebral hemorrhage. In few instances the loss of kidney substance is of sufficient degree to cause uremia and death.

The point which I wish to emphasize in particular is that the kidney lesions in these cases have nothing to do with the causation of the hypertension. They are the effects of the arteriolar changes which accompany hypertension and may be lacking in early cases. What then is meant by the term "nephritic hypertension," which we hear at every hand? To me it seems very doubtful that kidney disease is very often the determining cause of hypertension. But there are many cases in which kidney insufficiency is associated with hypertension. Among these there are the cases of malignant kidney sclerosis of the German authors and of chronic glomerulonephritis. They differ from the cases of essential hypertension in several important respects. The patients are, as a rule, younger. They are in their fourth and fifth decades, occasionally they are still in their twenties. The disease progresses much more rapidly to a fatal issue. Within one, two or three years death from uremia follows. As a rule the blood pressure is higher in this group of patients than in the preceding one and is more stable. Yet it is very unlikely that the hypertension in these cases is secondary to the kidney disease. Most probably it is determined by the same factor which determines the rapidly advancing arteriolar changes and the secondary destructive changes in the kidney. As a matter of fact, occasionally one sees patients with true uremia, in whom the blood pressure is not elevated.

More puzzling, on the other hand, are certain cases in which it seems quite clear the kidney insufficiency is primary, but in which hypertension and cardiac hypertrophy may develop to a marked degree. This obtains particularly in patients with congenital polycystic kidneys, in whom the terminal picture with uremia and hypertension may resemble closely that of chronic nephritis with hypertension. Other forms of kidney insufficiency, for instance, suppression of kidney function following compression of the ureters by new growths, or extensive loss of substance from pyelonephrosis or hydronephrosis, may be accompanied by hypertension. It seems hard to avoid the conclusion that in these cases the hypertension is really secondary to the kidney disturbance. Here, too, we may class the lesser degrees of hypertension that accompany the urinary obstruction of prostatic hypertrophy, which clear up when the local condition is relieved.

Does the blood pressure ever return to normal in these cases of advanced hypertension, particularly in those patients with advanced kidney changes and arteriolar disease? I am aware that many hold this belief and indeed take for granted that when severe myocardial insufficiency sets in, the blood pressure must drop to low figures. A corollary to this view is the assumption when one discovers a large heart without valvular defects in a patient with normal blood pressure, that the individual in question formerly suffered from hypertension. I am always sceptical when this interpretation is offered.

Careful observation will establish the fact that in by far the vast majority of patients with hyperten-

sion, the onset of severe myocardial insufficiency is followed by a fall of some 20 to 40 mm. in the systolic pressure with no alteration or with even a rise in the diastolic pressure. When we recall the factors that are responsible for the maintenance of the blood pressure, when we remember that the systolic pressure is determined largely by the systolic ejection from the heart, and that the diastolic pressure is determined chiefly by the peripheral resistance, and that it represents the constant load to which the heart is subjected, we are in a position to understand this phenomenon. When the myocardium weakens, the systolic output will diminish and, therefore, the systolic pressure will be lowered, but this does not of necessity affect the tonus of the peripheral arterioles which determines the diastolic pressure. As a matter of fact, the increased carbon dioxide content, or the diminished oxygen saturation of the blood or both stimulate the vasomotor centre and tend to elevate the blood pressure. That is why in certain patients with mitral disease or with emphysema, we find a moderate elevation of the blood pressure when the heart is insufficient, which drops to normal as the patient improves.

It is true that at times a blood pressure which has been persistently high returns to normal levels. A blood pressure of 200/110 may drop to 125/70. In a case recently studied at Montefiore Hospital the pressure was followed for two and one half years. In October, 1921, it was 210/110, in July, 1923, 135/68, but six months later it had again risen to 170/104 and shortly before the patient's death in February, 1924, it was 160/94.. As you see, in this case the pressure became lower but did not become normal. A marked drop in diastolic pressure is not due to cardiac failure but to a diminution in a loss of the influence which determined the increased tone.

The organs that suffer most frequently and most severely from the effects of persistent hypertension are the heart and the brain. Indeed, it is the rule for subjects of hypertension to die of cardiac failure, or of cerebral hemorrhage or thrombosis. Uremia is a rare termination.

With persistent hypertension, cardiac enlargement occurs very soon. Indeed, in acute nephritis with hypertension it may develop within a few weeks. Hypertrophy may in the course of time reach extreme degrees. Pathologically these hearts are characterized by little organic change, except an increase in the muscle mass and a slight increase in the interstitial connective tissue. Gross scars of myocardial degeneration following coronary occlusion occur, but are not characteristic. As a rule there is a marked discrepancy between the anatomical lesion and the degree of myocardial insufficiency. A patient may die of a failing heart, yet the pathologist may find the heart muscle in apparently good condition. Myocardial degeneration should not be rashly diagnosed in patients with hypertension. Here the electrocardiograph may be of distinct value.

I wish to dwell on only a few symptoms that accompany cardiac failure in patients with hypertension. The blood pressure reaction we have already discussed. With this there usually appears a typical gallop rhythm at the apex which is practically pathognomonic of weakness of the cardiac muscle. In the first stage of cardiac insufficiency it may appear only after slight exercise. The second important symptom of grave circulatory insufficiency which is seen with particular frequency in patients with hypertension is pulsus alternans. This would be observed more often if it were looked for more carefully. It is not necessary to employ a polygraph to detect its presence in most cases. In the more advanced stages it can be noted by simple palpation of the pulse. In doubtful cases it may at times be brought out by slight compression of the brachial artery with one hand, while palpating the pulse at the wrist with the other. Finally, alternation can be readily detected by means of the sphygmomanometer. One measures the blood pressure in the ordinary way, but releases the air from the cuff very slowly. If alternation is present one will find that the strong beats come through at a higher level of pressure than the weak ones. If, for instance, the pulse rate is 90, one may, at a pressure of 160 mm. hear the strong beats, but since only every other beat is a forceful one, the pulse rate will be halved, that is, to 45. On releasing the pressure still further, one will at a level of say 135 mm. hear both the strong and the weak beats and the full pulse rate of 90 will be perceived.

Cerebral hemorrhage or thrombosis is another very common sequel of hypertension. About two thirds of all patients with hemiplegia have hypertension. The development of a cerebral insult ordinarily exerts no effect on the blood pressure. It is of interest to note that patients with hypertension and hemiplegia, unless they are subjects of coronary artery disease, rarely die from cardiac failure. This is due, I believe, to the fact that their paralysis cripples them to such an extent that the heart is spared the strains and compensatory adjustments demanded by the exigencies and activities of everyday life. In other words, the patients are undergoing an enforced rest cure. Death in these cases is due either to further cerebral insults or to a complicating illness.

A word about the retinal changes in patients with hypertension may be of interest. Albuminuric retinitis, and the other changes described in these patients, may be traced directly to disease of the capillaries and arterioles of the retina. This arteriolar disease is the same as we see in the other organs of the body in hypertension. In essential hypertension we found a slowly progressing sclerosis of the arterioles in the kidney, pancreas and spleen. A similar change of the retinal vessels will account for the milder degrees of retinal change that are observed. We found that in the socalled malignant scleroses and in the chronic glomerulonephritides the arteriolar changes were more rapidly progressive and more severe. It is in these cases that we see the more advanced changes of albuminuric retinitis. In view of its pathogenesis you will understand that the term albuminuric retinitis is a misnomer, for the retinal picture is the result not of a toxic injury, but of the general arteriolar disease.

In this sketchy review of the subject of hypertension I have tried to emphasize only a few points. First, that a knowledge of the physiology and pathology of the cardiovascular system enables us to get a clearer and more rational picture of the disturbances of the blood pressure; and second, that hypertension is a manifestation of disease of the whole cardiovascular apparatus and not of the kidney alone.

Mitral Stenosis

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I venture to assert that the physical signs of mitral stenosis constitute an essentially difficult problem. No one, I am sure, can deny that a vivid description of physical signs which is easy to write is equally difficult to comprehend and fit to an individual example of the disease. If one could eliminate the occasional person presenting signs as they ought to be, it would be easier to believe how often many signs do not exist or cannot be found. In many examples of this condition a careful consideration of a skilfully taken history is of great importance, particularly a history of spitting of blood, which is present in a surprising number of cases.

The murmurs to be studied in mitral stenosis are, of course, those heard during diastole, when the blood current is going forward through the mitral orifice. This period should be divided into three parts in the mind and each part listened to with attention. As the heart relaxes the onward flow of the blood from the veins constitutes a current through the mitral orifice. How much noise this current makes depends upon the condition of the orifice and the conduction of the sound. The point is to bear in mind that this current of blood flowing into the heart is what must make the murmur of mitral stenosis. When the auricle comes into action, as it does when it is not fibrillating, it gives an additional push to this current so that the blood is moved faster, until the impulse that started in the auricle has traveled to the ventricle which contracts and reverses the current. If the valves are intact this reversal of the current closes the valves. If the valves are out of order the current flows backward into the auricle.

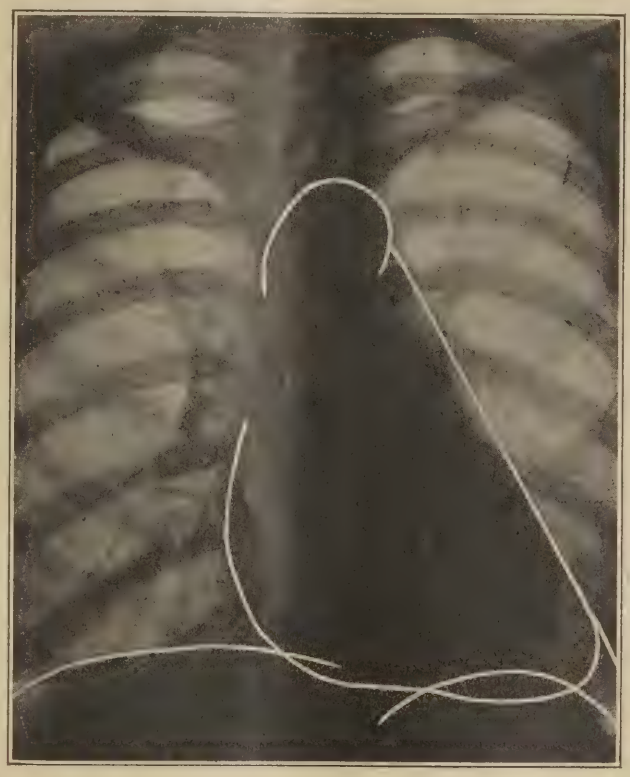

Fig. 1.—X ray of the heart in mitral stenosis

Our task in auscultation is to listen to see if any sound is being made. If we hear a noise we call it a murmur. Often enough there is no noise. The noise that we would expect from what we have said is a soft continuous sound during the whole of the diastole, with an increased sound when the auricle contracts and forces the blood more rapidly into the ventricle. It must be realized that the action of the auricle is not in any sense comparable with the action of the ventricle. The auricle has no valves to prevent the regurgitation of blood into the veins and its work is not an essential one, as is proved by the very effective action of the heart when the auricle is paralyzed.

The ventricle may be said to pick up the blood at a standstill and move it to a definite place beyond, as if a man stepped out on a road and picked up a load and carried it a block and laid it down. The auricle gives an additional push to the load that is already being carried forward by the push of the pressure in the veins and the suction of the expanding heart. The auricle is like a man standing at the side of a road administering a push to someone carrying a load forward from some place back.

This picture makes it quite clear why the murmurs of mitral stenosis are so uncertain and indefinite as compared with the murmurs that are produced through systole of the ventricle. If the expansion of the heart is very definite and the pressure in the veins is relatively high we get a diastolic murmur throughout the diastole. If the auricle is acting we get a sharp sound during the last half of diastole as the auricle administers its push to the passing stream. If the auricle is paralyzed the noise is often loudest when the current has had time to get under way and before it is checked by the commencing contraction of the ventricle. Hence we get a middiastolic murmur.

Sometimes when the expansion of the heart is very definite and the pressure in the veins very slight, we get a sound very early in diastole and no particular sound during the middle or end of the period. These sounds are limited in their amount of conduction and are often found to cover just about as much space as can be covered by the end of the stethoscope. They should be looked for a little above and within the apex.

Ten thousand doctors ten thousand times have described murmurs, but no one yet has been able to take the personal equation out of the matter. Hence it is a subject that cannot be asborbed second hand, for every man must work out his own interpretation of what he hears, being assured that he does not hear the same thing as the man ahead of him or the man behind him.

The subject of interpretation of murmurs lends

itself to fine writing and lecturing, but I hear almost every day of some great clinician who has abandoned his dogmatic attitude of former years, which was forced upon him by the popular opinion that a great doctor, and he alone, could hear and interpret heart murmurs. It is fortunate that modern cardiology has come along to give us new methods just at a time when the high priests of medicine have lost their faith in murmurs.

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Quinidine Sulphate in Auricular Fibrillation

Its Administration in Private Practice

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Since quinidine first came into general use a few years ago because of its extraordinary power to restore the normal rhythm in a fair proportion of cases of auricular fibrillation, there have been many case reports and a few experimental studies dealing with the fundamental method of its action. In an excellent paper dealing with the latter, Lewis and his coworkers (1) draw the following conclusions regarding the effect of quinidine sulphate in auricular fibrillation in man. They state that the drug has two actions: first, directly upon the cardiac musculature by which it lowers the sinoauricular rate; depresses and prolongs conduction time from auricle to ventricle; and, most important, it lengthens the refractory period of the auricular musculature. Second, it causes partial paralysis or release of the vagus; in this, it resembles atropine and differs from digitalis, which increases vagus inhibition.

Auricular fibrillation is now regarded as basically due to irregular blocking of a continuous circus wave of excitation, the normal method of the spread of impulses through the auricles. Although the circus wave still continues, blocking of it depends upon differences and defects in conductivity and irritability of various portions of the auricular musculature. The consequence is what we clinically know as auricular fibrillation.

Before normal rhythm is restored by quinidine, there is usually a preliminary stage of rapid heart action, with or without restoration of the normal rhythm. Occasionally the tachycardia becomes violent. This, and the fact that quinidine can cause gastrointestinal disturbances—nausea, vomiting and diarrhea—and occasionally cerebral embolism from slowing of the auricular blood flow coincident with the restoration of normal rhythm, have up to the present practically limited the use of the drug to hospital cases. To emphasize the danger, there is a recent report of a case of auricular fibrillation in a patient with mitral regurgitation who was given eight grains of quinidine daily for three successive days. In all twenty-four grains were given. On the second and especially the third day, there was evidence of severe decompensation with auricular fibrillation still present. It took thorough digitalization slowly to restore compensation. This indicates that there exists a drug idiosyncrasy to quinidine in some individuals, as indeed is true of all powerful drugs. Quinidine undoubtedly increases the tendency to decompensation or actually causes heart failure by its occasional action in causing marked increased ventricular rapidity.

I have had occasion to use quinidine sulphate in hospital practice in some forty patients with auricular fibrillation in all types of cardiovascular disease. Many of the patients were old persons with marked cardiovascular and cardiorenal changes, some with, others without, hypertension. Many were decompensated. The net result of quinidine administration was temporary restoration of normal rhythm in a few of these patients. A few complained of nausea. One or two vomited. Several exhibited an increase of tachycardia, but none to any alarming extent. Some of the patients had two or three courses of quinidine, but the results were the same. All of the patients were properly digitalized before the quinidine was given. I had not expected permanent restoration of the rhythm in these advanced cases of cardiosclerotic disease, for it was my clinical impression that quinidine was of value chiefly in younger persons without far advanced degeneration of the heart muscle, in other words, mainly those with valvular disease. My routine administration consisted in first giving one five grain probatory evening dose of quinidine sulphate. If the next day there was no evidence of idiosyncrasy and no untoward symptom—no vomiting, diarrhea or undue tachycardia—three other five grain doses an hour apart were administered in the morning. The patient was again examined. If fibrillation had not stopped or there was no contraindication, especially no significant increase of tachycardia, three more five grain doses of quinidine an hour apart were given on the succeeding day. Thus, altogether thirty grains were given.

I have found this method and amount satisfactory, and up to the present have not noticed any ill effects from the doses as such. It seems safe because any important drug idiosyncrasy will show itself after the first five or certainly after twenty grains, a dose which seems well within safe limits.

Because I consider quinidine a drug that should have the widest use in appropriate cases, and not be confined to hospital cases alone (indeed, it has recently been used in ambulatory cases) (2), I began the use of the drug in patients who were at home under the care of their private physicians. These were men of average ability, most of whom

had no special knowledge of cardiac disease. Where indicated the patient was first digitalized. Quinidine was given as already outlined, and the physician was told to visit the patient after the first, third and final doses. The special possible dangers to be looked for were pointed out. Not more than a total of thirty grains was administered. The physician then reported to me. I feel that if this method is carried out, the drug may be administered by the medical attendant almost as safely and as well as if the patient is under the control of a cardiologist in a hospital.

The following cases were treated by the family physician after consultation:

Case I.—J. R., aged fifty-two, gave no history of infection except rather frequent colds in the head. Twenty years ago, his insurance rating was normal. Six years ago, he was rated up. He is of an excitable though not worrisome temperament. Examination revealed a typical mitral stenotic lesion with auricular fibrillation. The latter was confirmed by electrocardiograms. The fluoroscope revealed a dilated aorta and an enlarged heart. He was returned to the care of his physician. Because of the tachycardia, he was first digitalized; twelve digitan tablets in three days were given. This reduced the cardiac rate to within normal limits. The quinidine sulphate therapy by the method above outlined, was instituted. This had no effect upon the rhythm, nor did it produce any gastric or intestinal disturbances or unwonted tachycardia.

Ten days later, quinidine sulphate was again given, but this time a total of forty grains were administered; that is, five grains hourly for four doses, then a visit by the physician, and again four hourly doses of five grains each. This dose likewise had no effect upon the rhythm, nor did it cause any untoward symptom.

Case II.—Mrs. C., aged forty-eight, patient of Dr. D., gave a typical rheumatic history. She knew of her heart lesion for at least eleven years. Her menses stopped one year ago. From the patient's history, it seemed probable that the onset of auricular fibrillation occurred as the result of climbing eight flights of stairs in an office building, followed by some excitement at home. Frequent digitalization, rest in bed, and sedatives had no effect upon the arrhythmia or upon the cardiac rate. Examination revealed typical mitral, probably also aortic stenosis, with auricular fibrillation. The latter was confirmed by electrocardiograms. The orthodiascope revealed a heart enlarged to the right and left. In addition to the quinidine sulphate routine, the patient's physician was advised to give luminal tablets, each containing one and one half grains, twice on the day before the quinidine therapy. The physician reported that normal rhythm was restored and remained so for two days, then fibrillation again set in. Quinidine was again advised. A later report from the doctor stated that except for occasional extrasystoles the rhythm has remained normal for several months. She is fully compensated, is able to follow her household duties and feels comfortable in every way.

Case III.—H.D., male, aged thirty-nine, patient of Dr. K., had chorea when eleven years old. He had had socalled heart trouble for years. Examination showed a typical mitral stenotic lesion with auricular fibrillation. The latter was confirmed by electrocardiograms. X ray showed that the heart was enlarged to the right and left. The patient's physician was advised how to administer the quinidine sulphate. The medication caused no deleterious effect. It had no effect upon the rhythm.

Case IV.—A. G., aged fifty-seven, patient of Dr. W., had much work and stair climbing to do. She had had frequent attacks of bronchitis and shortness of breath in previous years. Her climacteric began two years ago with menorrhagia, sweats, flushes and tachycardia. More recently she had complained of much dyspnea and had had several fainting spells. She had had "bluish" hands for years. She continued her hard work. Examination showed auricular fibrillation (electrocardiographic tracings), moderate cyanosis, moderate hypertension and a heart only slightly enlarged (x ray). The clinical diagnosis was moderate cardiosclerosis, with superadded cardiac overstrain and climacteric hyperexcitability. Her physician gave her the routine quinidine capsules, and reported that the day on which she took the capsules there was slight nausea, later vomiting, slightly increased tachycardia, and slight throbbing in the head. The next morning the rhythm was normal, except for occasional extrasystoles. The systolic blood pressure was 100. The patient was comfortable, there was no dyspnea. The rhythm remained normal for several days, then fibrillation recurred. Quinidine was again advised. The heart action was again regularized. The rhythm remained regular at the last report, several months later.

It is a well known clinical observation that embolism as the mechanical result of breaking off vegetations of an infected valve, especially in mitral stenosis, is by no means infrequent. It can occur with or without auricular fibrillation. It is not always the result of tachycardia. Some years ago, for example, I saw a case of embolism of the popliteal artery in a patient with mitral stenosis, no tachycardia, no arrhythmia and no rheumatic exacerbation. In our patient, since the accident occurred within two days after the increased tachycardia from quinidine, it is only fair to assume that the more rapid and perhaps more violent heart action had some influence in causing the embolism.

Case V.—Mrs. H., seventy-four years old, had been an occasional sufferer from phlebitis of the legs for years. Her heart had been irregular for some time; the type of the irregularity as determined by the electrocardiogram was auricular fibrillation. She also suffered from occasional tachycardial attacks at night; this was usually accompanied by gastric distention. There was slight edema of the legs and mucous râles at both bases. She had been digitalized at various times during the preceding months; this generally controlled the tachycardia and to some extent lessened the edema and pulmonary signs. The orthodiascopic tracing showed an enlarged aorta and moderate left ventricular hypertrophy. The auscultatory signs were those of aortitis, the clinical diagnosis was aortitis and cardiosclerosis. After she had been thoroughly digitalized for the last time, she was given quinidine sulphate in five grain doses

according to the method I have already outlined. There were no specially alarming symptoms on the quinidine day. Altogether twenty grains had been given. The blood pressure was normal. The next morning the fibrillation had ceased entirely, the pulse and heart action were regular with the exception of occasional extrasystoles. The systolic blood pressure was 130, the diastolic 80. The patient felt perfectly comfortable in every way. Early in the evening the patient vomited and soon thereafter fainted. There were many single as well as grouped extrasystoles; for several minutes at a time there was typical coupled rhythm. After the first fainting attack the patient was taken with generalized convulsive seizures. She became markedly cyanotic. She was unconscious with widely dilated pupils. There were comparatively long periods of apnea. The urine contained a rather large quantity of albumin for the first time. There was no special change in the superficial or deep reflexes. The convulsive seizures though less violent than the initial attack, continued at irregular intervals during the night. During the whole of this time the patient was in coma. When I saw her the next morning her mentality was again perfectly normal. There was no dyspnea. The urine contained albumin and casts. Coupled rhythm was present. My impression was that she had entirely gotten over the serious phenomena of the night before, and that she would probably slowly recuperate. She simply complained of her tongue which she had bitten during her convulsive seizures. The patient died suddenly late in the evening. An autopsy could not be obtained.

The cause of the convulsive seizures and circulatory collapse may be attributable to two possible causes. First: The toxic quinidine effect on the cerebrum somewhat similar to what occasionally happens when overdoses of quinine are given. Second: The toxic effect of quinidine upon the heart muscle. In my opinion the latter was the cause of circulatory collapse, as well as of death. It seems to me that the convulsive seizures were probably caused by some secondary cerebrocirculatory disturbance, possibly a temporary thrombosis in the larger cerebral veins.

SUMMARY AND CONCLUSIONS

Eleven[1] cases of auricular fibrillation, properly digitalized, are reported in which quinidine sulphate was administered by the family physician at the patient's home.

Of these patients, three were male, eight female; six had valvular disease (mitral lesions), five myocardial disease (cardiosclerosis). Of the six with valvular disease, normal rhythm was permanently restored in two cases; in one, the rhythm remained normal for but two days; quinidine had no effect in regularizing the rhythm in the other three. Of the five cases with cardiosclerosis, the rhythm was permanently restored to the normal in three, in the other two there was temporary normal rhythm for a day or two.

Taking the entire eleven cases, and using the term permanent restoration in the restricted sense of the months that the patients were under observation, there was permanent restoration in five cases, there was temporary restoration for a day or two in three cases, and the drug had no effect on the fibrillation in the remaining three. In two of the eleven cases, quinidine was followed by untoward results. In one, (Case IX—mitral stenosis) there was embolism of the radial which may possibly be attributed to the drug. In the other (Case X—cardiosclerosis), quinidine was directly responsible for death from cerebral and cardiac complications. In both, the same accidents would in all probability have followed quinidine administration in a hospital, for there was nothing in the cardiac status following quinidine by which any complication could have been foretold. In fact, in the fatal case (Case X), only twenty grains of quinidine had been given. The complications occurred after normal rhythm was established. This case probably illustrates the fact that patients with venous thromboses of various kinds (varicose veins with phlebitis, etc.) are especially prone to develop thrombotic and other complications with quinidine (3). Hence in these patients quinidine, if used at all, should be administered with extreme circumspection and caution.

With a knowledge of its possible dangers, and with proper restriction of the type of cases for quinidine therapy, quinidine sulphate, properly administered in digitalized cases of auricular fibrillation may be given almost, if not quite, as safely in private practice, under the guidance of the family practitioner, as in the hospital.

One distinct advantage in hospital electrocardiographic control over treatment in private practice is the fact that quinidine sulphate occasionally has been shown to produce fleeting paroxysms or showers of ventricular extrasystoles. And it is known that such arrhythmia is occasionally, although rarely, a precursor of an almost immediately fatal arrhythmia, namely, ventricular fibrillation. It is not always possible to diagnose runs of ventricular extrasystoles by ordinary clinical methods; these are most apt to be mistaken for an irregularity produced by auricular fibrillation itself. Hence there is an advantage in taking frequent electrocardiograms in a hospital so as to fix the type of questionable arrhythmias; thus the occasional untoward runs of extrasystoles produced by quinidine may be discovered in time and the drug be immediately stopped before the irregularity develops into ventricular fibrillation and death.

Perhaps some time a method will be devised by which one may tell in advance which patients are apt to react unfavorably to quinidine sulphate in this regard, and thus even this possible complication be prevented.

[1]The cases not cited were omitted due to lack of space.

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4 East Ninety-fifth Street.

Symposium on Syphilis

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, SEPTEMBER 17, 1924

Repair of the Syphilitic Nose*

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INTRODUCTION

The most difficult work which the plastic surgeon is called upon to perform is the replacement or repair of the nose totally or partially destroyed by syphilis. The satisfactory results obtained in the treatment of such cases by the method which will be presently described and the apparent reasonableness of the method itself are, therefore, the justification for the submission of this paper. The experience from which the method has been developed consists of six years of work here and abroad, partly in operation as principal and partly in assistance upon and observation of the operations of H. D. Gillies, of Queens Hospital, Sidcup, England, one of the foremost plastic surgeons of the world.

The procedure is submitted with sufficient confidence in its effectiveness to warrant its recommendation. It differs from methods which have invariably proved unsuccessful in that it recognizes the necessity for providing and does provide the three elements of the nose, viz., epithelial lining, supporting structure and skin. Any attempt to restore nasal destruction which does not involve restoration in these three particulars will fail. Most, if not all, of the failures of the past can be ascribed to the attempt of the surgeon to make suffice for a nose a structure which lacked in some respect what is necessary for a nose.

It is not difficult to explain the cause of these failures. Surgeons have attempted to effect repair by implantations of cartilage or bone, injections of hydrocarbon and introductions of silver filigree, ivory and celluloid forms, ignoring entirely the necessity for an epithelial lining. There can be no other or greater benefit from such methods than an evanescent improvement in appearance. There is no life in the replacement, and as it retains the facies of the original destruction the eventual disfigurement is even more pronounced. A proper lining must be provided if permanent replacement is to be accomplished. Otherwise the bridge support will be no more an integral part of the structure than a walk-

Fig. 20

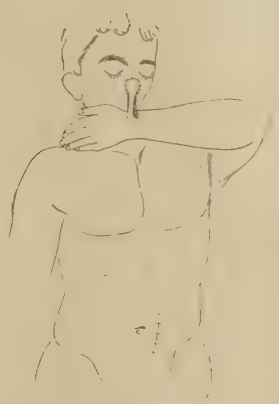

Fig. 21

Figs. 20 and 21.—Utilizing skin of the abdomen to provide for a nasal covering.

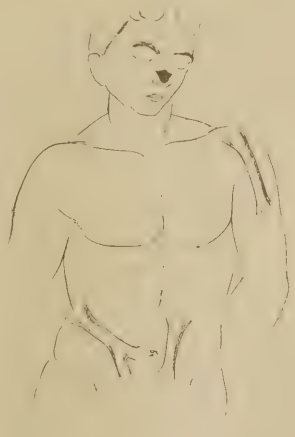

Fig. 22

Fig. 23

Figs. 22 and 23.—Utilizing skin of the upper arm area to provide for a nasal covering.

*Read in part before the New York Academy of Medicine, March 26, 1924.

Fig. 8.—Demonstrates the use of the balloon.

the degrees of destruction. The treatment varies in direct ratio to the extent of such destruction distinguishing each class from the others.

THE FIRST CLASS

In the first, the intranasal structure is intact, there is some loss of mucous membrane replaced by scar tissue and partial destruction of the cartilaginous bridge. This type is less frequent than are the others. The deformity resembles that produced by the improper removal of the nasal septum, or by a septal abscess resulting in destruction of the upper portion of the cartilaginous bridge. The loss of mucous membrane is not extensive and is confined to the anterior superior quadrant. It is not necessary as a rule in this class of cases to provide a lining. All that need be done is to implant the proper amount of chondral cartilage correctly shapened to give the same support originally afforded by the cartilaginous septum. The method to be employed is described in *Laryngoscope*, September, 1922, and New York Medical Journal, January 26, 1921.

Fig. 13a.—Typical syphilitic disfigurement of the nose. Third class.

THE SECOND CLASS

In the second class, there is extensive destruction of the mucous membrane and usually of intranasal structure and of the bony and cartilaginous bridge. This is the type most frequently encountered. It is clearly differentiated from the first class by a loss of bony and cartilaginous framework with extensive replacements of mucous membrane by scar tissue. No successful result can be achieved in the treatment of cases of this class unless a lining is provided. The lost mucous membrane must be replaced with true skin and a supporting frame supplied. The proper lining is provided by grafting skin according to the Thiersch method, which, if successful, as is generally the case, will change the appearance of the nose to that which results from a simple depressed fracture. Later the appearance is improved by the implantation of chondral cartilage. The steps in the process will be presently described in detail.

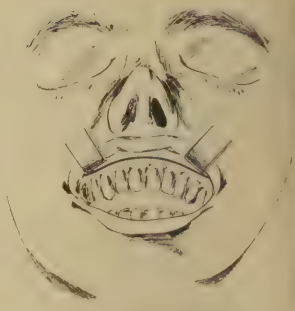

Fig. 2.—The incision.

Fig. 2 depicts this second class, the most common type of syphilitic deformity. The total loss of the frame has retracted the tip of the nose and its alæ. The vestibules are intact but adherent to the underlying bone and the shape of the pyriform apertures is consequently altered. To remedy the deformity the syphilitic contractures must be relieved and the nose restored to its normal shape and position. It is, therefore, necessary to separate the fibrotic attachments from the underlying bone. When the nose may be moved forward and backward at will, the operator will know that the fibrotic adhesions have been freed. There is then exposed a large area of raw surfaces

Fig. 11.—The typical syphilitic nose.

Fig. 12.—After successful epithelization. This changes the nose to the ordinary depressed fracture type.

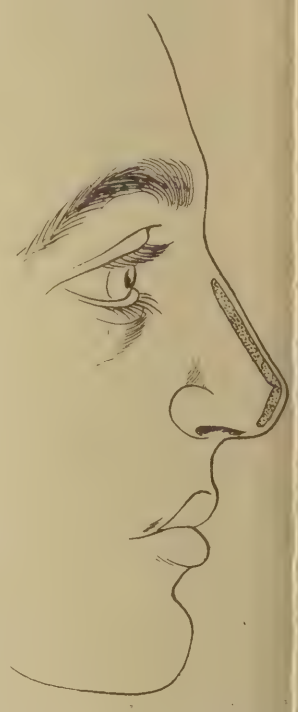

Fig. 13.—After the implantation of chondral cartilage.

Fig. 15.—Providing the lining n cases of external loss of the ose.

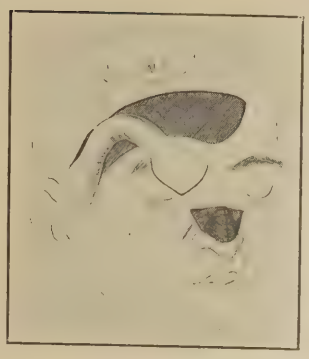

Fig. 16.—Lining of nose completed with a temporal artery forehead flap tubed to furnish a covering.

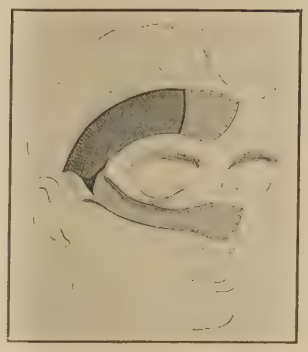

Fig. 17.—The tubed pedicle sewn into position.

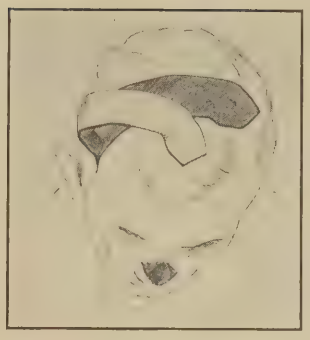

Fig. 18.—The scalp flaps. The hair follicles are later destroyed by x ray applications.

vhich must be covered with skin after the removal of scar tissue. With these preliminary explanations, ve are ready to proceed to a description of the operaion.

THE OPERATION

The patient is first referred to a dental surgeon killed in the art of making prosthesis appliances, vho will make a small removable cup splint to fit nto the upper teeth. If the mouth be edentulous, a pecial plate is made to which is attached the stanhion of the nasal appliance. To the centre of the plint there is attached an upright semiflexible piece f metal with three triangular wings. Its length will pproximate that of the raw area. (Figs. 4 and 5 re of an actual splint made by Jackson and Fraser, lental surgeons, Queens Hospital, Sidcup, England.) A cup shaped splint without the upright stanchion s fastened to the upper teeth, and an incision is made ne quarter of an inch above the gingival line exending from one canine fossa to the other. The inision is then extended laterally and upwards, seprating the syphilitic adhesions and freeing the alæ. The scalpel is then carried forward and upwards ver the lateral canthal and bridge areas of the nose, are being taken not to perforate the external skin. The nose may now be manipulated at will if the ndercutting has been thoroughly done. It should e retroverted as a glove is turned inside out and car tissue removed with delicate scissors until not vestige of such tissue remains.

SKIN GRAFTING THE RAW AREA

A mould of stent (dental modelling compound) s sterilized by boiling. A model of the raw area s made by inserting the sterile stent, made soft and liable by immersion in hot water, in the nasal cavity rough the buccal incision. Preparatory to so doing postnatal plug has been inserted in the nasal cavity nd the lower nasal chamber plugged with gauze ush with the pyriform aperture. The stent is thus revented from passing into the postnasal space nd the size and shape of the mould are controlled. The stent is pressed upward, then laterally and then orward to the tip until all the exposed raw areas re completely covered and an excess left to allow or subsequent contractions. The upright stanchion f the prosthesis appliance, heated in a spirits flame, then inserted upwards into the mould and screwed o the dental splint. The mould while warm must be anipulated to insure that the proper shape of the ose has been formed and that all the exposed raw areas are covered. Sterile ice water is sprayed through the nostrils causing the mould to set and it is then removed with the stanchion unscrewed from the splint. Difficulty may be experienced in removing the mould due to little protuberances adhering to the recesses of the intranasal chamber. Experience will disclose the location of these protuberances and they may be removed by melting with a hot septal separator.

Markings on the mould will show where the stent has actually come into contact with the raw areas. These markings are usually confined to the upper and lateral and upper tip part of the stent. It is the area thus identified which must be covered.

REMOVING THE THIERSCH GRAFT

The graft should, if possible, be cut in one large piece and thin in order that the whole mould may be covered and application to the nasal cavity facilitated. It is cut preferably from the right inner aspect of the thigh in a nonhairy area. The inner aspect of the arm may also be utilized. In cutting, deftness of hand, experience, the character of the assistance and the sharpness of the knife are the things that count. The graft is spread completely over the mould, raw side uppermost, care being taken to avoid wrinkles and slack. If the graft cannot be obtained in one piece, as is sometimes the case, the several pieces should be evenly spread over the mould with slight overlapping of the adjoining edges.

INSERTION OF THE GRAFT COVERED MOULD

The mould covered with skin and attached to the upright appliance is inserted in the nose per oral incision and secured to the base or splint attached to the teeth (see drawings). It should remain *in situ* for eight to ten days after which it should be removed and cleansed and the nasal cavity gently irrigated.

Inspection of the intranasal cavity now shows the formerly raw areas covered with an epithelial lining, grayish white in color. A mould of gutta percha is then made, patterned after the original one of stent and inserted into the nose to take the place of that removed. It is removed daily for cleansing purposes for a period of ten days to a fortnight, at the end of which time the graft, having become firmly adherent, a more permanent appliance (see drawing) is used to keep the nose in shape and prevent contractions. This appliance is removed and cleaned every few days. Its use is continued for

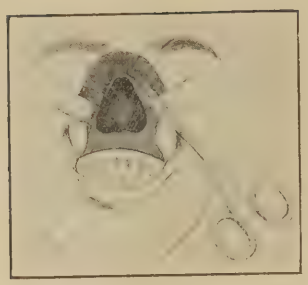

FIG. 3.—The excision of scar tissue after the tissues are forcibly retracted.

FIG. 4.—Showing dental appliance in position.

FIG. 5.—Showing stent covered with a Thiersch graft.

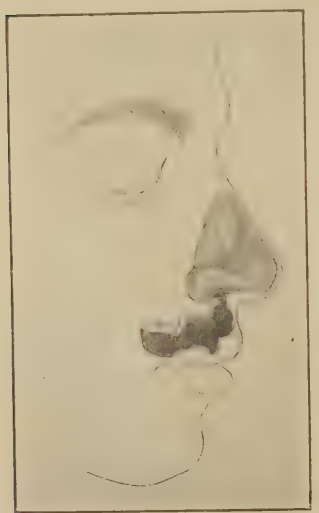

FIG. 6.—Whole raw area covered with modeling compound.

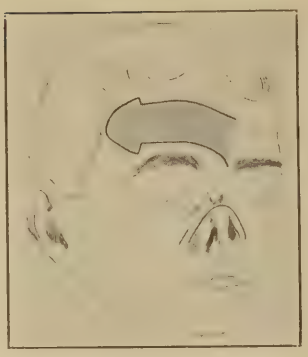

FIG. 13b.—External incision—supraorbital artery forehead flap.

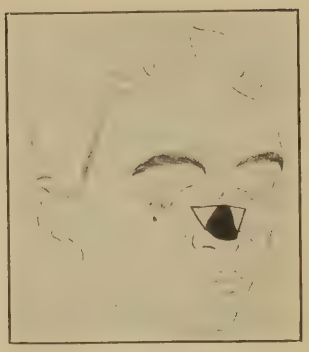

FIG. 14.—Providing lining in cases of utter loss of nose.

several months, when it is removed for good and the patient is ready for the implantation of chondral cartilage to serve as a bridge.

Chondral cartilage, taken from the right chest wall, is properly shapened and inserted between the newly made nasal epithelial lining and skin covering.

FINALLY

The mouth wound is then closed. If necessary the opposing surface may be freshened to insure closing. Sometimes it is necessary to do so as the wound area is purposely epithelized to prevent closure.

The graft described may be availed of as recognized surgical practice and if properly done will take in nine out of ten cases. In view of the nature of the deformity to be remedied, certainly the surgeon is at least justified in resorting to it.

THE THIRD CLASS—RHINOPLASTY

In the third class of syphilitic disfigurements there is destruction of the intranasal parts and total or partial loss of the skin covering, and rhinoplasty, more or less extensive, is the method of repair. The lining is obtained by swinging side skin flaps properly designed across the nose and sewing them together (see drawings).

The external covering is obtained from the forehead, scalp, upper chest, arm area or abdomen by the tube pedicle method of Gillies. The skin from the forehead best matches the normal nasal covering and the cosmetic result is best where it is used. The disadvantage is the resulting scar. A flap can be taken from the scalp and brought down to the nose. The hair roots may be epilated later by x ray.

An ingenious method of obtaining skin for the nasal covering is to tube the skin of the abdominal inguinal region, later attach the proximal end to the radial area of the wrist, finally sever the distal part of the abdominal tube and bring it up to the nose area (see drawings). After the flap is tubed the distal end as a rule is properly shaped and then taken up to complete the repair of the nose. Two to three weeks thereafter the pedicle is severed and returned to its original place. Later a cartilaginous bridge is implanted (see drawings).

In the repair of the syphilitic nose of this class there is undoubtedly a greater risk of gangrene occurring in a flap because the presence of syphilitic endarteritis interferes with the proper nourishment of the flap. Therefore, it is always advisable to have such cases cured of the disease before the repair is attempted.

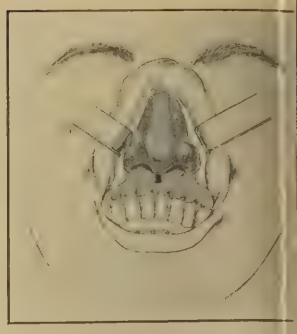

FIG. 7.—Illustrates the whol raw area covered with the mo eling compound.

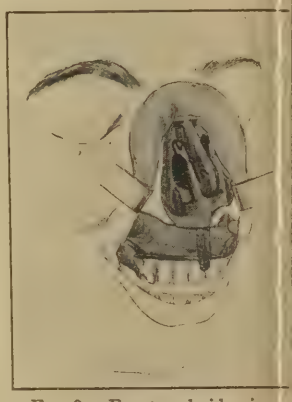

FIG. 9.—Front and side view the permanent prosthesis *in si*

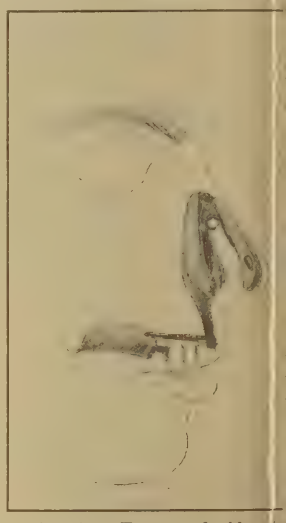

FIG. 10.—Front and side v of permanent prosthesis *in s*

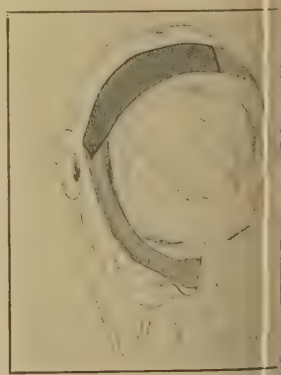

FIG. 19.—Scalp flaps. H follicles destroyed by x ray.

Extensive Luetic Necrosis of the Frontal Bone Followed Sixteen Years Later by Cancer at the Edge of the Scar

DOUGLASS W. MONTGOMERY, M.D.,
San Francisco, Cal.

The bones and joints in early constitutional syphilis are often affected with pains tending to be most severe at night, and on this account called nocturnal, and also, because of their severity, as osteocopic or bone racking. These pains are partly due to the fever, and also partly to localized inflammations of the periosteum, extending along the bloodvessels into the Haversian canals. These localizations manifest themselves by pain and by circumscribed tenderness and swelling. They almost always recede and leave no trace. In the later stages of the disease localized inflammatory processes may also arise, usually affecting the very same bones as were involved in the early stages, but which, instead of receding, may lead to necrosis, sometimes extensive.

The bones most frequently affected by this grave malady are the anterior surface of the tibia, the bones of the skull, the clavicles, and less frequently the ribs and the fingers. In the old museums these skulls and tibiæ formed a prominent exhibit. They became less frequent on the introduction of iodide of potassium, and under the newer methods of treatment they have become still rarer.

CASE HISTORY

A woman, aged fifty years, consulted us on November 9, 1907, on account of a large ulcer of the forehead, as shown in the photograph. She said that it had appeared a year previously as a tumor, and that her medical attendant had curetted it. He probably had regarded it as an epithelioma. The wound had never healed, but had gone on steadily increasing in size. When I saw it there was a large ulcer with extensive denudation of bone, and with satellite ulcers about the main lesion. There was an erysipelatous inflammation of the nose and right eyelids, and, as particularly significant, an ulceration in the right nostril.

This was long before the days of the Wassermann reaction, but there could be no doubt of the diagnosis. Its rapidity, its multiplicity, its curvilinear steep borders, its rapid implication of the bone and the coexistent lesion in the nostril stamped it as being luetic.

In spite of all these factors, selfevident as they are when detailed here, I, on first seeing the patient, nearly made a mistake in the diagnosis. I had dismissed her as being unsuitable for any but surgical treatment, when fortunately it flashed across my mind that it must be syphilis, and I recalled her for further consideration. It was then that I became aware of the trouble in the nostril, and I then saw that the essential lesions were syphilitic, but blurred by pyogenic infection.

Her family history was also interesting. She had married thirty-two years previously and had been pregnant five times. The first pregnancy miscarried, which was attributed to carrying heavy weights. The second went to term and produced a fine child. The third pregnancy miscarried from some unknown cause. The fourth went to term and yielded a daughter. The fifth pregnancy miscarried, supposedly from riding horseback.

The diagnosis, as finally determined, was late luetic ulceration with streptococcic infection.

TREATMENT

Under mercury and potassium iodide improvement quickly set in, but progress was naturally slow, because of the large amount of dead bone and the extent of surface involved. Shortly after beginning treatment a large black hard crust was expelled from the right nostril. This process was accompanied by doughy swelling and redness of the skin, so that at one time it was feared that all of this side of the nose might melt away.

FIG. 1.—An ulcer with steep curvilinear borders and a most irregular floor, occupying a large part of the frontal region. In the midst of the ulcer there is a small dark area where the necrotic bone can be seen, showing through. The necrosis could be demonstrated in several other situations, but this one is the best, as seen in the photograph.

In August a large piece of the outer plate of the skull was removed. After this we tried, in order to hasten the healing, vitelline membrane of egg grafts, which now I suppose have only an historic interest. They failed.

After sixteen years, on on September 4, 1923, the patient consulted us again, and this time for a well marked epithelioma which had begun on the edge of the scar. And this time the danger lay in assuming too hastily that the epithelioma might be a recrudescence of syphilis. On close examination, however, the well known signs of epithelial infiltration were plainly visible. Furthermore, the picture was not now clouded, as it was formerly, by pyogenic infection.

A cicatrix is a weak tissue, and therefore, it is not surprising that a degenerative disease, as cancer is, should develop in it. In fact, it is known that in some situations, as on the tongue, cancers in the scars resulting from luetic infiltration are particularly likely to occur. The rest of the scar had remained solidly healed from the previous treatment.

Radium treatment for the epithelioma was begun on September 4, 1923, using for the most part a plaque containing twenty-five milligrams of radium, heavily screened with lead and rubber, and retained in place interruptedly for a total of sixteen hours. Under this treatment the epithelioma resolved perfectly.

323 GEARY STREET.

The Progress of Italian Syphilographers

CHARLES GREENE CUMSTON, M.D.
Geneva, Switzerland

The Italians have been doing good work in syphilis and an attempt will be made to review some of their most recent studies.

At a meeting of the Medical and Surgical Society of Pavia, Quattrini gave his results of ultramicroscopical examination of material obtained from puncture of the lymph nodes for the diagnosis of syphilis. This is a simple operation, and examination of the material withdrawn gave 88.24 per cent. positive results in patients who had remained untreated. Therefore, its value as a diagnostic measure is evident. I would also remark that Quattrini twice found the Spirocheta pallida in the lymph nodes of cases of frambesia, and then Monti has described spirochetæ obtained from the medullary substance of the lymph nodes and adventitia of the bloodvessels of the lymphatic parenchyma in some cases of infectious icterus. This method of diagnosis should be valuable in instances of latent syphilis.

A curious instance of primary pigmentary syphilide developing in large areas has been reported by Gravagna occurring in a syphilitic patient four months after an initial treatment of thirty injections of biniodide of mercury. On the dorsal aspect of both hands there was a large brownish black plaque which was limited by a straight line extending from the middle finger to the middle of the wrist. On the right hand, the thumb and index and middle fingers were involved, while on the left, the thumb and index were free from pigmentation. These pigment lesions disappeared in three weeks under daily injections of mercurial biniodide.

Pasini and Vigano have been using radiology for the diagnosis of bone syphilis. Employed in various cases of simple or ossifying periostitis, ostitis, and gummatous periostitis, they found that a special characteristic bone disease was an increase of the opacity of the bones, indicating a process of condensing ostitis, the reverse of the rarefying process present in tuberculosis. However, Martinotti, of Bologna, is inclined to hold a contrary opinion.

Cappelli has recorded the interesting case of a male, aged twenty-five, who contracted syphilis in 1915. He began suffering from cranial periostitis in 1916, and after recovery from this, cranial periostitis again developed in 1919, but this time there was ulceration and suppuration, especially on the right side of the skull. The necrosis extended down to the dura. He improved after a long series of novarsenobenzol injections and afterwards potassium iodide. Then later, he had an apoplectic ictus which involved the left side of the body, there being paresis followed by facial paralysis. He returned to the hospital in March, 1921, weak and emaciated, and with albuminuria. He died eleven days later.

At autopsy, the cranial lesions were remarkable on account of their extent; they involved all the bones of the vault of the skull and even the occipital bone. The disproportion between the limited lesions was interesting, likewise the long duration of the processes without subjective or objective disturbances of the nervous system, regardless of the participation of the dura in the gummatous process and the ensuing virulent septic infections. The parietals, frontal, and a portion of the occipital were necrosed and perforated, with areas of rarefaction and condensation of the bone.

Several instances of syphilitic reinfection have been observed of late in Italy. Minassian has met with three cases. The first patient was treated during the chancre before the Wassermann had become positive, the second when the Wassermann had become partially positive. Each was given a total of three grams fifty centigrams of neosalvarsan. The third patient was first treated late, during the secondary period after the roseola had developed, but treatment in this case was more energetic, consisting of a total of six grams of neosalvarsan, given in two series of injections with a short interval between them. In the two first cases, treatment was continued for three years with numerous series of calomel injections.

In the first patient, reinfection occurred twenty-eight months later; in the second patient, forty-eight months later, and in the third at the end of fifty-four months. In two cases the Wassermann was still negative during the first few days of the reinfection. In the third case a roseola followed the chancre. In two cases the new chancre occupied a different situation from the chancre of the first infection.

Piccardi, out of one thousand patients treated with novarsenobenzol, obtained twelve cures (1.2 per cent.) and supposes that this result may be obtained quite frequently if treatment be commenced at the onset of the secondary phase of the infection. If, as is generally admitted, the immunity against a second infection is dependent upon the persisting of the first, those cases in which a reinfection occurs with all the requisite characteristics, must of necessity demonstrate the possibility of a complete cure of the first syphilis controlled by clinical and serological investigation.

Generally it is admitted that an abortive cure may be obtained when the seroreaction is still negative before the fifteenth to the twentieth day from the first appearance of the chancre. Out of a total of twelve cases observed by Piccardi, seven realized this condition, and the remaining five dated from twenty to thirty-eight days from the onset of the primary sore. This observer also maintains that sterilization of the patient is possible during the entire second phase of incubation, and what is more, in one hundred cases of primary chancre he obtained a clinical cure with complete absence of any secondary manifestation during a lapse of time varying from six months to ten years, with a negative seroreaction, although the treatment was occasionally begun when the secondary symptoms had developed.

Of the twelve treated cases, four were given a

mixed treatment of novarsenobenzol and mercury; eight were treated exclusively with novarsenobenzol. Piccardi does not believe that large doses of arsenic are necessary; he employs from 0.45 to 0.60 centigrams as an average dose.

In the twelve cases of reinfection observed by Piccardi, this took place at intervals of two months to six years after the first syphilitic infection. In the cases where the interval between the cure of the first infection and reinfection was so very short, treatment of the first syphilis had been begun five days after the onset of the chancre.

Tommasi has also observed what seems unquestionably to have been an authentic instance of syphilitic reinfection. A male, at the age of fourteen years, developed chancres in the sulcus of the penis on the right side, followed by enlarged inguinal lymph nodes, erythema, headache, and general enlargement of the lymph nodes. This was in January, 1907, and treatment was begun February 27th, with twenty injections of sublimate in doses of 0.015 each. In June, 1907, the patient was given sixty injections of the same dose. Headache and pain in the bones recurred in June, 1908, and thirty sublimate injections were given. The patient was not treated again until the age of twenty-eight years.

For a long time the patient had had sexual intercourse with the same woman. On August 20th and September 28, 1920, he had connection with another woman who was examined by Tommasi, who found a positive seroreaction on December 10th, the man having contracted a chancre on the sulcus of the penis on the left side on December 1st. Spirochetæ were obtained from the lesion. At the same time there were enlargement of the left inguinal lymph nodes, erythema, headache, bone pain, and a positive seroreaction. At the end of December, mucous patches, with spirochetæ, appeared in the mouth, with generalized enlargement of the lymph nodes and emaciation. Unfortunately the patient had sexual connection with his former mistress on November 12th and 15th, namely, forty-five and fifty days after the infecting coitus. She contracted an endourethral chancre containing spirochetæ, and this was followed by erythema, facial paralysis, periostitis, etc. Therefore reinfection of the man cannot be doubted.

It is to be remarked that the treatment of the first syphilis in the man was mild, hence the early intense treatment recommended at present by most observers as essential for a radical cure, does not seem to hold. It is also evident that the first infection did not result in even a relative immunity for decreasing the virulence of the second infection, which was more severe than the first, both in the patient and the contaminated female.

Clinical Significance of the Negative Outcome of the Complement Fixation Test in Syphilis*

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Philadelphia

Despite recent claims for precipitation tests the complement fixation test is at the present time the most commonly used laboratory procedure in the control, diagnosis and treatment of syphilis. So much value is placed on its positive outcome that few recall its limitations. So quickly do most of us consider syphilis excluded when the complement fixation reaction is reported negative on a single examination that we fail to remember the warnings of most serologists, that the interpretation of their results must rest to a large degree on the clinical picture, namely, the history, signs and symptoms—and on the therapeutic test.

With the advent of the Kolmer complement fixation test for syphilis (1) the positive outcome of the test, in this climate at least, may now be said always to indicate the presence of syphilis. That this is not always convincing proof that the nature of the condition under consideration is surely syphilitic must never be forgotten, since syphilitics may have other conditions besides syphilis and to which it often tends to predispose. The negative reaction, single test or provocative, does not by any means indicate the absence of syphilis. In this respect, even several negative reactions are not always conclusive of the absence of syphilis, as clinical cases herein reported show. It has already been pointed out, by Schamberg and Greenbaum (2), that even with the invaluable advance in the serological study of syphilis made by the Kolmer test, negative complement fixation reactions with this test still occur in the presence of known syphilis, indicating a lack of a hundred per cent. sensitiveness (as with any biological test and for the probable reason given below) despite its absolute specificity. The importance of recalling this possibility of negativity, particularly in tertiary syphilis, endosyphilis and parasyphilis, is selfevident and its cause of peculiar scientific interest.

THE NEGATIVE REACTION

From a practical viewpoint, the blood complement fixation reaction, in the presence of known syphilis, may be negative:

1. In the early days of the chancre.
2. In the late stages of syphilis.
   a. endosyphilis (latent or visceral).
   b. parasyphilis (tabes, paresis and neurosyphilis).
   c. tertiary (mucocutaneous) syphilis.
3. Temporarily.
   a. as the result of partial or irregular antisyphilitic treatment.
   b. after the ingestion of large amounts of alcohol (3).
   c. from causes not as yet understood (4).

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4. Permanently after efficient and sufficient treatment.
5. In congenital syphilis with active or latent lesions.

1. The production of complement fixing substances or reagin does not occur in the body, at least in detectable amount, as soon as the person contracts syphilis or even after the appearance of the primary lesion—this period of negativity varies from a few days after the chancre appears (always negative before) up to, in some instances, the appearance of the secondary manifestations when, with the new Kolmer test, it almost always, in our experience, becomes positive.

The cause of this period of negativity is generally regarded as being due to a lack of sufficient spirochetal activity with a resultant lack of body reaction and a consequent absence of reagin. Although we and others have already shown that, with the Kolmer test, this negative period is greatly reduced, still its presence in known primary syphilis has not been entirely eliminated for the reasons given. In the presence of a suspected chancre with dark field examination negative or this means not available, a "local complement fixation test" (5) on the fluid from the suspected lesion is in order and should this be negative, regularly repeated tests of the blood serum, the intervals not exceeding five days, are indicated. A lesion, suspected as being chancrous, must not under any circumstances be treated until the diagnosis is certain.

2. It is in the late stages of syphilis that considerable care must be taken in the interpretation of the negative outcome of a complement fixation reaction. Craig (6) estimates that with the Wassermann test, about thirty per cent. of parasyphilitic cases (tabes, paresis and acute neurosyphilis) about thirty per cent, of endosyphilitics (visceral, latent) and about thirteen per cent. of tertiary or mucocutaneous syphilitics will give negative blood reactions. These enormous percentages with the original Wassermann technic are significant and worthy of serious thought, particularly because of this, the innumerable modifications the test has undergone and the lack of a universal adoption of a standardized technic. The percentage of negativity with the Kolmer test has not been worked out in this clinic but from actual experience, although not entirely eliminated, they are considerably smaller in neurosyphilis and mucocutaneous syphilis. The following case report in point is cited:

Case.—G. M., female, black, aged twenty-three, was first seen March 19, 1923. The only facts of importance in her family and personal history was that of two pregnancies, one was a miscarriage and the other a stillbirth. The patient was generally in a poor condition and presented a widespread ulceration of two years' duration, involving the labia minora (which had been almost completely destroyed), the labia majora, the lower vaginal tract (anterior and posterior walls). The edges of the ulceration were firm and markedly sclerosed; the urethral orifice was partially occluded and later, as healing occurred, completely necessitating operative dilatation. It was painful and tender (probably due to an associated gonorrheal vaginitis) and covered with a thick mucopurulent material probably of gonorrheal origin also.

Twenty-four complement fixation tests were performed during a period of four months: the reaction was negative in the first seventeen tests, weakly positive on two and strongly positive on one later occasion. Under regular intravenous neoarsphenamine treatment, gradual improvement both generally and locally took place, until at the present writing the lesion is completely healed.

Klauder and Kolmer (7) and others have shown that the specific complement fixing substances have both a local and hematogenous origin. As these authors demonstrated its local origin in primary lesions only, before the blood reaction became positive, it would appear safe to assume that reagin originates at and probably only at the site of spirochetal activity (cellular theory). If this be so, as many believe and as studies on various cutaneous ulcerations appears to confirm (8), the clinical case cited above would be specially indicative of this. Positive local complement fixation reactions on fluid obtained from syphilitic tertiary ulcerations in patients with a negative blood reaction have not as yet been reported. In this instance three tests conducted on the fluid obtained from the ulcerated areas and at times when the blood reaction was negative gave anticomplementary reactions. Once when the blood reaction was weakly positive the local reaction was likewise weakly positive but quantitatively to a lesser degree. It is possible that reagin produced at the site of spirochetic activity enters the blood; but as in our patient, particularly in instances where considerable sclerosis occurs, in a way walling off the condition, little or no reagin gains access to the general circulation and the blood reaction is as a result weakly positive or completely negative.

Positivity in the early stages is reduced as nature tends to wall off the irritant and the products of spirochetic activity. Does the blood negativity that some acquired chronic syphilitics and a greater unknown percentage of congenital chronic syphilitics develop indicate a similar process? Rothschild (9). Beltran (9), and Kolmer (9) have observed chronic leg ulcers, of syphilitic nature clinically, with dense surrounding sclerosis, negative or weakly positive complement fixation reactions yet healing perfectly under treatment. Parasyphilitics and endosyphilitics easily conform to the same theory. In this connection, it is worth recalling that about ten per cent. (10) of parasyphilitics present negative blood complement fixation reactions but with positive spinal fluid reactions. Such cases particularly point to the local origin of reagin, that is in the spinal cord and brain, the site of spirochetic activity, since spinal fluid under these circumstances corresponds, in part at least, to the serous fluid from primary and tertiary lesions. When the blood complement fixation test is positive in such cases, it is because there are open lesions elsewhere in the body.

Although mucocutaneous and parasyphilitic lesions can usually be diagnosed clinically, offsetting the laboratory report of a negative complement fixation reaction, it is much more difficult clinically to diagnose endosyphilis or visceral syphilis under the same circumstances. It is definitely known that spirochetes—active?—may exist in chronic syphilitics with visceral lesions and blood negativity (Warthin). The recent reports on the serological relapses of syphilitics after seven years of negativity would

appear to confirm this, if the present conception of the meaning of a positive complement fixation reaction in syphilis is maintained.

3. The temporary reduction of a positive complement fixation reaction in partially treated syphilitics is well known to syphilographers (Cases II to VIII, inclusive). The commonest and most important from the practitioner's point of view is that occurring shortly after the institution of treatment, particularly in chronic syphilitics. For this reason and for another given below, the administration of but a few doses of one of the arsenobenzenes cannot be too strongly condemned. If arsenobenzenes are to be used in the treatment of a syphilitic then maximum totals for maximum effect should be given. Smaller amounts at irregular intervals tend to the production of arsenic fast spirochetes. In any case treatment should be continued with mercury and preferably bismuth.

The corollary to the above is the importance of never treating a genital lesion of suspicious syphilitic nature until the diagnosis is certain. The arsenobenzenes, administered to patients in the primary stage but with, as yet, negative blood fixation reactions, will prevent positivity. In sufficient doses this is certain; in insufficient doses they but retard it. Non-secondarily infected primary lesions usually heal spontaneously; most secondarily infected ones do not, unless the spirochetic factor is removed and the local tissue nutrition thus improved. A physician suspects but is not certain of the diagnosis; the complement fixation reaction is as yet negative; he administers two or three doses of one of the arsenobenzenes; the fixation reaction is still negative (naturally or because the drug has retarded the appearance of reagin) and the physician concludes that he was dealing with some other condition. Because of a lack of a correct diagnosis and the resultant insufficient treatment the subsequent development of a positive reaction goes undetected for years. This undoubtedly explains, in part at least, the reason for the large increase of chronic syphilitics.

An examination of the reports of Cases II to VIII, inclusive, is interesting. It will be noted that there is no relation between the time of development of negativity and the relapse to positivity to the time when treatment was first instituted. This does not occur irrespective of the stage of the infection as has been noted above. This tendency to negativity with later relapse to positivity is much rarer in systematically treated primary and secondary syphilitics; it is common in chronic syphilitics. In these latter it may occur after the first or not until the seventh or eighth injection. They may have relapsed sooner as but weekly tests were made. The duration of the negative phase as based on weekly tests and under neoarsphenamine treatment alone, varies from one to seven or more weeks.

From the above, it may be seen how false the sense of security a single complement fixation test, taken at an unfortunate time, often gives. The too frequent making of blood tests during the course of treatment of a syphilitic is to be guarded against. Syphilitics require a maximum amount of treatment once the complement fixation reaction has become positive. A fairly definite rule, adopted by most syphilographers, is to count no syphilitic proba-

CASE II.—LATENT SYPHILIS

Date	Treatment	Comp. Fix. Reaction
May 3, 1923	Neoarsph. .9	Strongly Positive
May 10, 1923	Neoarsph. .9	Strongly Positive
May 17, 1923	Neoarsph. .9	Strongly Positive
May 31, 1923	Neoarsph. .9	Negative
June 7, 1923	Neoarsph. .9	Strongly Positive

CASE III.—TERTIARY SYPHILIS

Date	Treatment	Comp. Fix. Reaction
Jan. 26, 1923	Neoarsph. .15	Weakly Positive
Feb. 5, 1923	Neoarsph. .15	Strongly Positive
Feb. 12, 1923	Neoarsph. .15	Moderately Positive
Feb. 19, 1923	Neoarsph. .15	Negative
Feb. 26, 1923	Neoarsph. .45	Negative
Mar. 19, 1923	Neoarsph. .45	Negative
Mar. 26, 1923	Neoarsph. .45	Negative
Apr. 2, 1923	Neoarsph. .45	Negative
Apr. 23, 1923	Neoarsph. .45	Negative
Apr. 30, 1923	Neoarsph. .45	Negative
May 7, 1923	Neoarsph. .45	Moderately Positive
May 21, 1923	Neoarsph. .45	Strongly Positive
May 28, 1923	Neoarsph. .45	Weakly Positive
June 4, 1923	Neoarsph. .45	Weakly Positive

CASE IV.—LATENT SYPHILIS

Date	Treatment	Comp. Fix. Reaction
Feb. 5, 1923	Neoarsph. .9	Weakly Positive
Feb. 12, 1923	Neoarsph. .9	Moderately Positive
Feb. 19, 1923	Neoarsph. .3	Weakly Positive
Feb. 26, 1923	Neoarsph. .3	Negative
Mar. 5, 1923	Neoarsph. .3	Negative
Mar. 12, 1923	Neoarsph. .3	Moderately Positive

CASE V.—LATENT SYPHILIS

Date	Treatment	Comp. Fix. Reaction
Mar. 15, 1923	Neoarsph. .9	Strongly Positive
Mar. 22, 1923	Neoarsph. .9	Strongly Positive
Apr. 5, 1923	Neoarsph. .9	Moderately Positive
Apr. 12, 1923	Neoarsph. .9	Moderately Positive
Apr. 19, 1923	Neoarsph. .9	Strongly Positive
Apr. 26, 1923	Neoarsph. .9	Strongly Positive
May 3, 1923	Neoarsph. .9	Moderately Positive
May 17, 1923	Neoarsph. .9	Negative
May 31, 1923	Neoarsph. .9	Moderately Positive

CASE VI.—TERTIARY SYPHILIS

Date	Treatment	Comp. Fix. Reaction
Apr. 6, 1923	Neoarsph. .9	Weakly Positive
Apr. 16, 1923	Neoarsph. .9	Negative
Apr. 23, 1923	Neoarsph. .9	Negative
Apr. 30, 1923	Neoarsph. .9	Negative
May 7, 1923	Neoarsph. .9	Negative
May 14, 1923	Neoarsph. .9	Negative
May 21, 1923	Neoarsph. .9	Negative
May 28, 1923	Neoarsph. .9	Strongly Positive
June 4, 1923	Neoarsph. .9	Negative
June 11, 1923	Neoarsph. .9	Negative

CASE VII.—LATENT SYPHILIS

Date	Treatment	Comp. Fix. Reaction
Mar. 26, 1923	Neoarsph. .45	Moderately Positive
Apr. 2, 1923	Neoarsph. .45	Moderately Positive
Apr. 9, 1923	Neoarsph. .9	Moderately Positive
Apr. 16, 1923	Neoarsph. .45	Weakly Positive
Apr. 23, 1923	Neoarsph. .45	Moderately Positive
Apr. 30, 1923	Neoarsph. .45	Weakly Positive
May 7, 1923	Neoarsph. .45	Negative
May 14, 1923	Neoarsph. .45	Negative
May 21, 1923	Neoarsph. .45	Moderately Positive
May 28, 1923	Neoarsph. .45	Strongly Positive
June 4, 1923	Neoarsph. .45	Strongly Positive
June 11, 1923	Neoarsph. .45	Moderately Positive

CASE VIII.—LATENT SYPHILIS

Date	Treatment	Comp. Fix. Reaction
Jan. 11, 1923	Neoarsph. .9	Moderately Positive
Jan. 22, 1923	Neoarsph. .9	Moderately Positive
Jan. 25, 1923	Neoarsph. .9	Strongly Positive
Feb. 1, 1923	Neoarsph. .9	Negative
Feb. 8, 1923	Neoarsph. .9	Moderately Positive
Mar. 1, 1923	Neoarsph. .9	Weakly Positive
Mar. 8, 1923	Neoarsph. .9	Weekly Positive

CASE VIII—*Continued*

Date	Treatment	Comp. Fix. Reaction
Mar. 15, 1923	Neoarsph. .9	Negative
Mar. 22, 1923	Neoarsph. .9	Negative
Mar. 29, 1923	Neoarsph. .9	Negative
Apr. 12, 1923	Neoarsph. .9	Negative
Apr. 19, 1923	Neoarsph. .9	Negative
Apr. 26, 1923	Neoarsph. .9	

bly cured unless his blood (and at least one spinal fluid taken at the same time) complement fixation reaction is negative at least two years after the original positive finding.

4. In congenital syphilis, although the positive outcome of the complement fixation test is a sure sign of syphilis, the negative reaction by no means excludes the presence of that disease. Negativity, in the presence of known congenital syphilis, is especially common. This fact is important to remember as not infrequently it gives a false sense of security, particularly to physicians who examine children to be placed in homes. It is also well always to warn parents themselves syphilitic, that negativity in their offspring, is a sign of variable value.

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Diagnosis and Treatment of Syphilitic Exophthalmic Goitre

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It is not always an easy matter to make an absolutely sure diagnosis of a syndrome when one has not the proof represented by the causal factor. Up to the present time I am unaware of any researches undertaken to discover the treponema pallida in miscroscopic sections of the thyroid gland. Given the great sensitiveness of the syphilitic virus to mercurial or arsenical treatment, such researches would undoubtedly be failures, because as soon as these substances are introduced into the organism the spirocheta tends to disappear. On the other hand, as I shall attempt to show, the therapeutic results obtained in cases of syphilitic exophthalmic goitre are in general quite favorable, so that the case is not apt to come into the surgeon's hands. I am firmly convinced that if a bit of thyroid were removed for microscopical examination in a confirmed case of syphilitic Basedow's disease the spirocheta would be detected, because this organism has a predilection for glandular parenchyma.

The action of antisyphilitic treatment is one of the best proofs we possess of the etiological cause of the affection, although frequently one will be dealing with old sclerous lesions so that the treatment may be doubtful in some subjects or variable in results according to the degree of activity locally presented by the treponema. In a general way, however, those cases where more or less relative failure ensues are rare as compared with the numerous unquestionably favorable results obtained.

In passing, I would mention the diagnostic importance of Wassermann's reaction, which should never be neglected in cases of syphilis, even when of long standing, as well as reactivation of this reaction. One must likewise take into serious consideration the search for the varied stigmata of hereditary syphilis in the patient's antecedents. When dealing with instances of familial exophthalmic goitre the physician should invariably be suspicious of the socalled neuropathic heredity and direct his clinical investigation to more real data.

Morbid associations in many cases should also be a warning, although often a rather late one. For example, a case of confirmed locomotor ataxia associated with Basedow's syndrome will give therapeutic results evidently mediocre. In a remarkable article on the differential diagnosis of morbus Basedowii, Stern (1) distinguishes typical exophthalmic goitre from the basedoid type. He maintains that the former is the true exophthalmic goitre in the antecedents of which one never finds infectious diseases such as typhoid, syphilis or rheumatism, diseases upon which the latter often depends.

What should be thought of the larvate states which Stern calls basedoid, met with so commonly in practice? May it not be assumed that an exophthalmic goitre developing from the onset startlingly evident symptoms represents a rapid involvement of the thyroid gland, by an infectious process electing this organ and neglecting all other localization? Thus could clinically be explained the intensity of the onset and absence of other symptoms. On the contrary, syphilis is more often characterized by a slowly progressive invasion; the spirocheta only progressively vitiates the thyroid parenchyma, and the glandular secretion thus being slowly disturbed, it follows that the clinical physiognomy becomes outlined discreetly.

Another question is: When do these larvate forms begin and at what time in the process can the term exophthalmic goitre be applied? It is not my intention to enter into the discussion of this highly interesting question, which would carry me far beyond the limits of this short paper. I would merely

say that Joffroy, as far back as 1888, presented seven cases of tabes with tachycardia before the *Société médicale des Hôpitaux de Paris,* and showed that six of them offered a more or less marked protrusion of the eyes, while two had hypertrophy of the thyroid and tremor. Joffroy thought that four of the seven cases presented Basedow's disease and he concluded that locomotor ataxia might give rise to tachycardia and also perhaps to a slight degree of exophthalmos either on account of some central lesion, a change in the peripheral nerves or by some simple functional disturbance.

CLINICAL STUDY OF A FAMILY

The clinical study of a family, of which I possess detailed notes, is of the greatest interest, but I will merely give a brief summary of each of the eleven children composing it.

Children Nos. 1 and 2 died in early life. Child No. 3, Lucy, died at the age of three years of an affection of the spinal cord. No. 4, Léon, died at fifty years. A confirmed tabetic, he lost his sight and appeared to have had an exophthalmos. He also had ulcers on the legs. No. 5, Victor, is aged fifty years. He never contracted any venereal disease. At the age of forty-two he was suddenly seized by retention of urine, which led to the discovery of tabes. At present ataxia is marked, Argyll-Robertson sign present, absence of tendon reflexes, no goitre, but the eyes are brilliant and bulge slightly; heart beats eighty-five to the minute. No. 6, Martha, was not examined.

No. 7, Louis, is aged thirty-eight years. He had never been ill, did his military service, was not alcoholic. He had noticed a tendency to tremor; vasomotor reactions were sharp and he blushed easily and sweated abundantly. He was very nervous and irritable, had slight exophthalmos, eyes were brilliant, there was slight tachycardia, pulse ninety beats a minute. Tremor varied but was always distinct, including tongue. There was no goitre or dental deformity; a patch of leucoplasia on mucous surface of right cheek. No. 8, Helen, was aged thirty-six years. During the last eighteen months distinct signs of Basedow's sydrome had progressively developed. There was a large goitre, more evident on the right side; tachycardia, 120 beats a minute. She complained of nocturnal palpitation; no cardiac lesion. Exophthalmos; Moebius, von Graef and Stellwag's signs positive. She was unmarried; menses regular; Wassermann reaction positive in blood.

No. 9, Louise, aged thirty-three years, married; one child aged seven years, in good health. Patient had been nervous since the age of three years. Slight exophthalmos; eyes brilliant; very slight tremor. Pulse rate, one hundred a minute. Some cardiac erethism; auscultation revealed a double second sound apparently not due to mitral stenosis. No dental stigmata; slight deafness on right side. Wassermann was positive in blood.

No. 10, Marguerite, aged thirty-one years, married, no miscarriages, three healthy children. She had never been ill until a characteristic Basedow syndrome developed at twenty-six years. There was a voluminous goitre, especially on the left side; circumference of neck thirty-six centimetres; neck increased in size during menses and from emotional causes. There were no disturbances of the voice. There was a systolic murmur, constant tachycardia, pulse 110 beats a minute, regular; oculocardiac reflex negative. Severe exophthalmos; von Graef, Moebius and Stellwag's signs present. No periocular pigmentation, paralysis, or nystagmus; eyes brilliant; very rapid tremor, especially of limbs during movement. Patient was very nervous, suffered from frequent heat flushes alternating with sweating attacks. Tendon and cutaneous reflexes were normal; Romberg and Argyll-Robertson absent. There was marked dental stigmata with retrognathism. Wassermann was positive in blood.

No. 11, Fernande, aged twenty-six years, unmarried, was always nervous but never ill. Menses regular, no sweating, no goitre, no enlargement of neck. Distinct but mild exophthalmos, eyes brilliant; tachycardia, 130 beats a minute. Blood pressure with Pachon, maximum 17, minimum 10; oculocardiac reflex indifferent; tremor, especially of hands. There was no dental deformity, but marked retrognathism. Patch of leucoplasia on left side; Argyll-Robertson negative; Wassermann positive in blood.

Victor, the fifth child of the family, and a confirmed tabetic, presented an insignificant tachycardia and a slight exophthalmos and it is a question whether or not these extremely larvate symptoms of Basedow's disease should be attributed to the tabes, when among the patient's collaterals five brothers and sisters presented unquestionable signs of the syndrome. Therefore, the question of the syphilitic origin of the exophthalmic goitre being left aside, it is of interest to be able to estimate the degree of defectiveness of the thyroid secretion by humoral reactions, since in reality we are dealing with a glandular disturbance. Hence a few words in respect to recent research work undertaken in this direction may not be out of place.

REID HUNT'S ACETONITRILE TEST

Hunt studied the antitoxic action of the thyroid gland by the use of acetonitrile, a compound whose toxicity is due to the giving off of free hydrocyanic acid. Experiments made with white mice showed that animals fed on thyroid preparations offered an increased resistance to acetonitrile and that in this resistance the potency of the thyroid is proportional to the amount of iodine it contains. If, instead of feeding mice with thyroid preparations they are given dried blood, obtained from an exophthalmic goitre patient, for ten days, a remarkable resistance of the animals to injections of acetonitrile ensues. A dose of thirty-two milligrams will kill the control animals, whereas forty-eight milligrams are easily supported by the mice fed on the dried blood.

Several observers have repeated these experiments, among them Trendelenburg, Herbert, Lussky, Carlson and Woelfel, and Ghedini, with results more or less in accord with those of Hunt.

Before the war I undertook, in collaboration with Garnier, to verify these curious experiments. We employed mice fed on thyroid extract and another lot fed on blood from a case of Basedow's disease. The results seemed fully to confirm Hunt's results,

but we were unable to carry on our work sufficiently to regard our findings as absolutely conclusive.

Fraenkel has shown that a marked hyperadrenalinemia is found in the circulating blood in patients with Basedow's disease. In his experiments, the amount of adrenaline was measured by comparative observation of the force and frequency of contraction of a bit of uterine tissue from a rabbit, in an isolated state and in serum.

This experiment may be carried out by other procedures. Moltzer and Ehrmann studied the production of adrenaline mydriasis in frogs, while Cameron believes the best method is to determine the effect of adrenaline on the blood pressure in rabbits previously atropinized. Hoskins devised a technic based on the principle that adrenaline stops the movements of an isolated segment of intestine of a rabbit when immersed in Ringer's solution.

All these biological procedures for the research of the blood adrenaline are interesting, but they are very delicate to carry out. Falta, who believes there exists a Basedow adrenalinemia and likewise admits that intravenous injections of thyroid extract produce a secretion of adrenaline, also thinks that the latter phenomenon is met with in numerous clinical conditions, and Cannon especially has insisted particularly upon its occurrence in emotive states.

ABDERHALDEN'S DIALYSIS TEST

This has given doubtful results in the hands of Lampe and Fuchs and this complex method has practically been discarded.

Roseo, repeating the initial researches of Papazolu and of Marinesco, attempted a study of the deviation of the complement in Basedow's disease, using an alcoholic extract of a Basedow goitre obtained by thyroidectomy as an antigen. Their results are encouraging and worthy of further examination and study.

Lastly, René Porak has resorted to the use of the action of hypophyseal extracts on the cardiovascular apparatus and glycosuria in the diagnosis of exophthalmic goitre. It appeared to this investigator that extracts of the hypophysis constantly slowed the pulse rate in Basedow's disease, a phenomenon invariably absent in all other forms of tachycardia, while the hypophyseal glycosuria is occasionally increased. These experiments are of the highest interest and will certainly, if continued, give further important results.

Therefore, it is possible that in the near future one may be able to appreciate by humoral reactions the disturbance produced by the secretions of a diseased thyroid gland. From the purely clinical viewpoint, the diagnosis of the classical Basedow syndrome will always be easy, but in larvate cases the diagnosis may remain a matter of doubt and it is in these circumstances that the physician should think of hereditary syphilitic dystrophic myopia—a rare condition it is true, a few cases of which have recently been reported by Prof. Gaucher.

For years the profession has attributed an important diagnostic value to antisyphilitic treatment in suspicious cases where the first examination does not confirm the fact that lues is not the certain cause of the morbid process presented by the patient, and although we now have the Wassermann reaction, whose value is unquestioned, nevertheless it has not dethroned the older test. In the somewhat complex question of syphilitic exophthalmic goitre, the quite remarkable action of antiluetic treatment in the majority of cases fully justifies the etiological classification that I propose. The results obtained are variable, but in a general way satisfactory, as the table of cases treated shows. (See table of therapeutic results.)

Recent publications, especially the researches of Roussy and Clunet, reveal the fact that Basedow's syndrome follows upon a thyroiditis which itself has created a more or less marked glandular hyperplasia. In practice the physician will meet with varied clinical examples; sometimes the case is one of early syphilis in which exophthalmic goitre makes its appearance; in other patients the syndrome has existed for years in a more or less larvate form in cases of long standing syphilis or in hereditary syphilis. In still other instances one is dealing with a common goitre which becomes basedowified from the action of the spirocheta pallida. Hence it becomes apparent that specific treatment will act differently in these various circumstances. When the lesion is still in activity and vitiation of the thyroid secretion has not become formally established and the causal agent—the spirocheta pallida—still intervenes on its own account, one should rightly expect positive results from treatment if this be carried out vigorously and thoroughly. But when the lesion is of long standing, where fibrous tissue has carefully walled in foci of endocrine hyperplasia, the secretion becomes more or less permanently changed. In these circumstances treatment still is valuable, as will be seen by consulting the table, but amelioration will generally be in inverse ratio to the chronicity of the glandular involvement.

THERAPY

The small number of exophthalmic goitres so far treated is not enough for one to appreciate the value of antisyphilitic treatment by modern methods.

In eleven cases mercurial treatment was resorted to; in five, mercury benzoate was the agent used; in two cases mercury biniodide was used, and in the remaining four cases the compound used is not mentioned. In three other cases neosalvarsan or novarsenobenzol was used. In the remaining cases iodides were given alone or in combination with mercury.

The latter cases are particularly remarkable. It is a well known fact, upon which Penzold has rightly insisted, that, in general, Basedow patients very badly support iodine or its compounds. Syphilitic Basedow cases, on the contrary, derive excellent results from this treatment and in Zelener's patient (Case XV in table) for example, a single iodine treatment resulted in an absolute recovery.

The value of specific medication in syphilitic exophthalmic goitre appears to be exceptionally evident and in many cases one need only resort to it without any other therapeutic measures being brought into play. These results are in accord with the recent researches of Roussy who says: "Only those treatments directed to the principal cause . . . would seem to be efficacious."

Besides the mercury, arsenical and iodine pre-

parations, certain general therapeutic procedures directed against the changed thyroid secretion may be tried. I would merely mention sodium salicylate recommended by Chibret and quinine sulphate as advised by Lancereaux and Paulesco. It is an undoubted fact that these two drugs act as antiinfectious agents and as such, as Roussy has pointed out, are capable of exercising a marked action at the onset of the process, that is to say, in the phase where Basedow's disease is still a thyroiditis.

One will, however, be more inclined to resort to hematoserotherapy which was in vogue a few years ago, among them being antithyroid chemotherapy, devised by Ballet and Enriquez, which by the use of hematoethyroidine diminishes the untoward effects of hyperthyroidization by introducing into the organism a certain amount of neutralizing toxic substance which these observers maintain relieves the insufficiency of the toxic substance to be neutralized.

Thyrotoxic serotherapy is based on the principle of cytotoxic sera. An animal subjected to repeated injections of thyroid gland will form antibodies in its serum susceptible of hindering the functions of the thyroid secretions. This treatment has given brilliant results in the hands of Rogers and Beebee, but its technic is delicate.

In patients presenting a syndrome where an excessive and disturbed function of an endocrine gland is incriminated, one may hope that a decrease of the clinical symptoms may ensue after ischemic atrophy or partial excision of the parenchyma. But regardless of the brilliant results of surgical treatment of exophthalmic goitre I maintain that medical treatment in the syphilitic form of the affection should prevail.

THERAPEUTIC RESULTS OBTAINED BY ANTISYPHILITIC TREATMENT

1. ACQUIRED SYPHILITIC BASEDOW.

Author's Name.	*Treatment.*	*Results.*
1. Personal.	Neosalvarsan.	Slight amelioration.
2. Sainton.	Mercury biniodide.	Idem.
3. Abrahams.	Mercury treatment.	Recovery.
4. Idem.	Idem.	Idem
5. Idem.	Idem.	Idem
6. Penzold.	Mercury and iodides.	Almost complete recovery.
7. Idem.	Idem.	Great amelioration.
8. Lévy-Frankel.	Mercury benzoate.	Marked amelioration.
9. Idem.	Mercury and iodides.	Great amelioration.
10. Idem.	Mercury iodides, Hectine.	Very slight amelioration.
11. Idem.	Mercury benzoate.	Very great amelioration.
12. Idem.	Idem.	Amelioration.
13. Idem.	Idem.	Unsuccessful.
14. Sainton.	Idem.	Great amelioration.
15. Zelener.	Iodides.	Complete recovery.
16. Hischmann.	Mercury benzoate.	Amelioration.
17. Leonard.	Mercury treatment.	Great amelioration.

2. CONGENIAL SYPHILITIC BASEDOW.

18. Personal.	Mercury biniodide.	Slight amelioration.

3. HEREDITARY SYPHILITIC BASEDOW.

19. Personal.	Neosalvarsan.	Almost complete recovery.
20. Clark.	Idem.	Idem.

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Silver Salvarsan in the Treatment of Syphilis

*A Comparison with Neosalvarsan**

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"Silver salvarsan was first made by Ehrlich, but was not introduced into the therapy of syphilis until early in 1918, when Kolle, the successor to Ehrlich, announced the clinical experiences with this product from the George Speyer House. Kolle and Ritz found that silver and its salts exert a decided antisyphilitic action on experimental syphilis in rabbits. The increased antiluetic action of silver salvarsan is explained by the synergistic action of silver and salvarsan. Silver salvarsan was first manufactured by Farbwerke, vorm, Meister, Lucius and Bruening, the original producers of salvarsan and neosalvarsan. . . . The consensus seems to be that silver salvarsan is a decided forward step in the chemo therapy of syphilis. It is less toxic than salvarsan to animals and its trypanocidal activity is approximately twice that of salvarsan and three times that of neosalvarsan. The official toxicity test of silver salvarsan requires a twenty per cent. higher tolerated dose than that of salvarsan" (1).

"Silver salvarsan is a brownish black powder, readily soluble in room temperature water." It is "the sodium salt of silver diaminodihydroxyarsenobenzene (the exact molecular formula has not yet been established). It contains approximately twenty per cent. of arsenic and approximately fifteen per cent. of silver" (2).

The solvent used, in the treatment of the cases reported, was .4 sodium chloride solution using forty c. c. of solution to .1 fram of silver salvarsan; .1 gram was given for the initial dose, .2 gram for all other doses except the last, when .3 gram was given.

All patients treated were adult males, either white or black, 162 men being treated. Treatments are given weekly. Approximately four minutes' time is allowed for the administration of the drug. Preceding the administration of the silver salvarsan, three treatments are given, each consisting of one gr. of mercury salicylate, intramuscularly, and, at the same time thirty-five gr. potassium iodide and 0.3 gr. bichloride of mercury are given, orally. After

*Report of 162 cases treated at the Ohio State Penitentiary.

the third treatment of mercury salicylate the administration of the silver salvarsan is begun, with one treatment weekly. During the time the patient is under silver salvarsan treatment, he is, also, kept on the mercury salicylate, injection weekly, and these injections follow the close of the administration of the silver salvarsan, until fifteen treatments, in all, of mercury salicylate have been administered.

One month following the completion of all treatment blood is drawn for Wassermann test to determine the result of the treatments. No routine spinal fluid examination was made for the determination of the progress of the treatments; blood examination alone being used as a check.

In all cases where additional treatment is administered, three additional injections of the silver salvarsan are administered immediately following the close of the mercury salicylate, without the mercury salicylate. These injections are given at four day intervals, except in some cases where the entire course of treatment is repeated.

In all cases reported where neosalvarsan was used the same technic was observed, as regards the administration, with the exception that .3 gm. was used as the initial dose, .6 gm. following initial dose until the last treatment, when .75 gm. was administered.

In the fifty-five cases treated with neosalvarsan, fifty-four patients had tertiary syphilis, while only one patient had primary syphilis.

NEOSALVARSAN TREATMENTS

Cases treated	55	100.0 per cent.
Cases becoming negative	19	34.5 per cent.
Cases remaining strongly positive	12	21.8 per cent.
Cases responding to treatment	23	41.8 per cent.
Cases treated, but no check	1	1.9 per cent.

In these cases twenty-five patients admitted chancre and twenty-one admitted gonorrhea; while twenty-seven denied chancre and thirty-four denied gonorrhea. Three patients could give no history of infection. Of the fifty-five cases treated with silver salvarsan, all cases were tertiary syphilis.

SILVER SALVARSAN TREATMENTS

Cases treated	55	100.0 per cent.
Cases becoming negative	24	43.5 per cent.
Cases remaining strongly positive	13	23.6 per cent.
Cases responding to treatment	18	32.9 per cent.

In these cases eighteen patients admitted chancre and thirty-three admitted gonorrhea; while thirty-four denied chancre and twenty-one denied gonorrhea. One patient could give no history of infection.

RESULTS COMPARED

A comparison of the results obtained in the use of silver salvarsan, as compared with the results obtained in the use of neosalvarsan, is as follows:

Negative with the use of silver salvarsan	43.5 per cent.
Negative with the use of neosalvarsan	34.5 per cent.
Responding to treatment—silver salvarsan	32.9 per cent.
Responding to treatment—neosalvarsan	34.1 per cent.
Remaining strongly positive—silver salvarsan	23.6 per cent.
Remaining strongly positive—neosalvarsan	21.8 per cent.

Fifty-two patients were given additional silver salvarsan, some received three extra injections, while others received two or more regular courses (3) of treatment. Forty-seven of these patients had tertiary syphilis, while five had primary syphilis. Of the five primary cases, two became negative, two responded to treatment and the other one remained strongly positive.

THREE OR MORE EXTRA INJECTIONS

Cases treated	52	100.00 per cent.
Cases becoming negative	26	50.00 per cent.
Cases remaining strongly positive	7	13.46 per cent.
Cases responding to treatment	19	36.54 per cent.

In these cases thirty patients admitted chancre and thirty admitted gonorrhea, while fifteen denied chancre and twenty-two denied gonorrhea. Eight patients could give no history of infection.

The response to treatment was much greater where additional treatments were given, this being shown by fifty per cent. becoming negative and 36.54 per cent. responding to treatment, not to negative, a total of 86.54 per cent. responding.

A comparison of the results obtained in the use of three or more extra injections with the results obtained in the use of one regular course of silver salvarsan is as follows:

Negative with regular course	43.5 per cent.
Negative with three or more additional injections	50.00 per cent.
Responding to treatment (regular course)	32.9 per cent.
Responding to treatment (three or more additional injections)	36.54 per cent.
Remaining strongly positive (regular course)	23.6 per cent.
Remaining strongly positive (three or more additional injections)	13.45 per cent.

Many of the patients who received extra injections were men whose reactions remained strongly positive following the first course of treatment. Hence, the higher percentage obtained when the extra treatments were given is made more strikingly apparent. Many of the patients given additional treatments were not as responsive to treatment as others. Frequent reactions were observed during the treatment of the men given neosalvarsan with occasional dermatitis showing, and frequently necessitating the hospitalization of the patient. During the administration of silver salvarsan there was rarely ever a reaction necessitating the hospitalization of the patient, and no dermatoses.

My observations were that the reactions following the use of silver salvarsan were negligible as compared with those following treatment with neosalvarsan.

In all cases the Wassermann test (4) was repeated after thirty days of completion of treatment, and in many cases was repeated again eighteen months later, and the final test was the one used in the report of cases.

CONCLUSIONS

1. It has been demonstrated to my satisfaction that the therapeutic value of silver salvarsan is greater than that of neosalvarsan.

2. The toxic effects exhibited by silver salvarsan have been much less than those exhibited by neosalvarsan. This fact makes the use of silver salvarsan more desirable from the point of view of both the patient and the physician.

3. The use of additional treatment is indicated from the viewpoint of end results.

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3. Regular course being seven intravenous injections of either neosalvarsan or silver salvarsan and fifteen injections, intramuscularly, of one grain each, mercury salicylate.
4. All Wassermann examinations were made by the State Department of Health Laboratories.

Oculomotor Paralysis of Syphilitic Origin

Treated with Mercury and Iodides

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Case.—H. C., forty years old, male, was first seen by me last November. He complained of inability to open his right eye for the past three days. Prior to the day of his trouble he had gone to bed perfectly well and awakened with his right eye closed. His past history was interesting to the extent that he had been married twice and in the interval between marriages admitted the possibility of specific infection. He had two children by his first wife and none by his second. Neither of his wives had had any miscarriages.

When the ptotic right eye was raised the pupil was seen to be completely dilated. It was unresponsive to light or accommodation. Vision was O.D. 20/50, O.S. 20/30. The raising of the upper eyelid caused diplopia. A false image was projected to the left of the real image. The false image was binocular as it disappeared on exclusion of either eye.

The patient could abduct the eye, but could not adduct, elevate, or depress the right eye. The left eye was unimpaired, being freely movable in all directions. There was a paralysis of all the muscles supplied by the oculomotor nerve of the right side, both intrinsic and extrinsic. The external rectus and the superior oblique remained active.

Both fundus oculi were negative, Wassermann positive. The Wassermann of the second wife was negative. There was no neurological symptoms, such as Romberg, and loss of patella reflex.

After six weeks of antisyphilitic treatment, consisting of weekly injections of salicylate of mercury and forty-five grains of potassium iodide daily, the patient recovered the use of the oculomotor nerve. He could raise the levator, he could abduct, elevate, depress or rotate the eye, and the pupil responded to light and accommodation.

The rapid response to treatment in this case shows that mercury and iodides are effective without arsphenamine.

The differential diagnosis from other causes of oculomotor paralysis is quite evident: the history, the Wassermann reaction, and the therapeutic result.

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Observations on the Bismuth Therapy of Syphilis with the Oxybenzoic Acid Compound

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A general review of the progress made within the last few years in the treatment of syphilis with bismuth compounds shows that some definite conclusions may be drawn concerning the particular indications and the method of administration. As with the arsphenamines the immunatory and spirocheticidal effects in bismuth compounds run parallel. Both of these, however, and particularly the former, vary so considerably in the individual patient that no hard and fast rules can be laid down. Each case will therefore require individual handling.

Primary syphilis may be treated effectively with bismuth compounds alone, though this should not be made a general rule and is in fact strictly indicated only wherever for some reason arsphenamine medication has to be avoided. Thus we have treated a seronegative primary case (the patient had a serious vitium cordis) exclusively with the oxybenzoic acid compound of bismuth (bismogenol). Fifteen injections of one c. c. in two to three day intervals effected disappearance of the induration in ten days while all secondary symptoms were prevented except a positive fluctuation of the Wassermann and Sachs-Georgi reactions. This positive fluctuation appeared after the first few days of treatment and would in all probability have been provoked by arsphenamine also. At the end of the course however both reactions were completely negative and remained negative.

As far as we can judge, from our clinical results at the present stage, bismuth compounds seem to promise most in the treatment of cerebral syphilis and incipient tabes. Mueller (1) has traced ample quantities of bismuth in the spinal fluid. He also observed a decrease of the pleocytosis and of the first phase, as well as a distinctly beneficial influence in syphilis of the central nervous system. Our clinical experiences correspond to these observations in a large number of cases of cerebral syphilis which we treated with the oxybenzoic acid compound of bismuth.

A further indication for bismuth therapy is given by its prophylactic value. Levaditi and Sazerac in a series of animal experiments observed that bismuth compounds either in ointment form or by intramuscular injection guarantee a protection against infection as long as three hours after the invasion of the spirochetæ. Bismuth resistant cases have been ob-

served occasionally. It appears though that the resistance is less directed against the bismuth as such but rather to its particular compound and vehicle. Logically a change of the compound is indicated here. One will rarely be forced to give up bismuth medication entirely as may happen with arsphenamine in a case of idiosyncrasy.

Another observation of fundamental importance is the prolonged remaining of the bismuth at the site of injection, i. e., the formation of a socalled depot. Following an intramuscular injection the bismuth can be traced radiographically in the muscle four to five days later. Levi and Bing (3), who have gathered statistics along these lines, advise repeated radiography to ensure the earliest possible discovery of a retarded resorption. Wolffer, who also experimented on the same question, found that the bismuth could be traced in the muscle of rabbits as late as thirty-four days after the injection. While arsphenamine solutions and mercury emulsions occasionally remain at the site of injection unaltered for weeks and may lead to a necrotic process, the prolonged remaining at one site of the bismuth compounds has hitherto proved to be a methodical though very slow process of resorption, with new formation of capillaries (Mueller, Blass, Kratzenstein). In our experience the danger of accumulation of bismuth is small, provided the initial dose is carefully studied and one feels one's way by gradually increasing the dose and controlling the blood picture. Storing of the bismuth takes place chiefly in the liver, kidneys, cerebrum and salivary glands. Much of this accumulation depends on the particular bismuth compound. We have not seen disturbances of this kind with the oxybenzoic acid compound. Stomatitis requires attention. Milian (4) reported inflammation of the buccal mucosa in ten per cent. of his cases. We have generally managed to avoid pronounced stomatitis by carefully groping our way with new patients and slowly increasing the amounts given. Rises in temperature cannot always be avoided. Particularly in secondary eruptions our injections always provoked rise in temperature, which in these cases was probably due to the sudden flooding of the system with toxic material, spirochete masses, etc. H. Mueller (1) reports a case in which the bismuth sodium potassium tartrate caused a rise of the temperature up to 40° C. This case we believe may be due to the particular compound.

In all cases we hold that an exact control of the blood picture is essential during all antisyphilitic medication. This is frequently neglected though it is a reliable measure for judging the status of the patient. A sudden decrease of the white cells, particularly the lymphocytes, is just as vital as a sudden drop of the red count and demands immediate interruption of the medication and rest for the patient. A temporary general stimulation with the Alpine sun lamp during these stages has proved satisfactory. As a further measure for controlling the biological reaction of the patient we have made the control of the sinking rapidity of the red blood cells a routine measure.

As to the damage to the kidneys much has been reported in the literature of the last years. Day found albumin and granulated cylinders after intravenous injections of citrate of bismuth. Blum observed that the kidney damage was always concomitant with stomatitis and enteritis and that these represent the primary disturbance, an opinion which seems justified and has been reported by Mueller (1). We have managed to avoid these disturbances by a careful groping dosage and by frequently examining not only the urine but also the centrifuged deposit as advised by Felke (5). As to the influence of bismuth compounds on the serum reactions we have seen a pronounced and lasting influence of the oxybenzoic acid compound (bismogenol) on the Wassermann and Sachs-Georgi reactions. As our observation period only covers three years we can only state that the clinical results obtained with bismuth medication in all stages of syphilis have been satisfactory and should encourage to further experiments and observations. In all cases of idiosyncrasy against arsphenamine and mercury attempts with bismuth medication are indicated and justified.

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X Ray Treatment of Syphilitic Interstitial Keratitis.—The following conclusions are drawn by T. L. De Courcy and J. H. Mather (*British Medical Journal*, January 5, 1924):

1. In syphilitic interstitial keratitus, x rays in weak doses have an undoubted effect in cutting short the early stages of infiltration into the deeper corneal layers.

2. The earlier the stage of the disease at which this treatment is started, the more rapid the improvement and the more satisfactory the results.

3. The younger the patient the better the reaction to x rays. In the cases treated children reacted more rapidly than young adults, while in older people the reaction was less satisfactory.

4. It is in the relief of pain, photophobia, and lacrymation that x rays show the most striking results. The acute stage is also much shortened by checking infiltration and vascularization.

5. The opacities in young subjects are undoubtedly benefited by x rays.

6. In no case was any damage done to the eye or the surrounding tissues, and the patients complained of no inconvenience during the treatment.

7. Small doses only of x rays are necessary.

8. X rays should be used as an aid to, but should not take the place of, local, antisyphilitic, and general treatment.

9. The value of small doses of x rays shown in interstitial keratitis justifies their trial in certain chronic eye diseases where treatment has been disappointing, such as the painful blind glaucomatous eye and scleritis of the aged. Further, a safe and more stabilized technic, such as that used by the authors, holds out hope of better results in many eye conditions, both chronic and acute.

Gastrointestinal Symposium

Medical Journal and Record

PUBLISHED SEMIMONTHLY BY

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, OCTOBER 1, 1924

Mimicry of Gastroduodenal Ulceration by Disease of the Appendix

*Lymphatic Drainage from the Ileocecal Region to the Upper Abdomen**

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From the biological point of view the gastrointestinal tract represents the oldest morphological structure in the body. In its phylogenetic development it has undergone remarkable transpositions and changes in morphology but it is essentially an autonomous muscular tube capable of variations in the rate and amplitude and rhythmicity of its contractions. The association of the central nervous system with the gastrointestinal tube has been of comparatively recent origin as is evidenced by the fact that upon complete section of the vagus and splanchnic nerve connections the normal processes of digestion are carried on in a fairly satisfactory manner. It seems unnecessary to enter into any detailed or intricate explanation of the hypothesis of vagus and splanchnic tone to account for some of the many aberrations of function which we find in gastrointestinal pathology. The alimentary tract throughout its entire course exhibits variations in specific function and reacts in a somewhat definite manner to irritation and to a variety of pathological conditions. As a general proposition the gut tube exhibits two fundamental functions, a, the function of secretion, and b, the function of motion. In considering the former we are impressed with the duplication of secretory activity and there seems to be a large margin of safety (1) in regard to the essential digestive enzymes. It is in disturbance of motor function that we meet the most diverse symptomatology. For while the secretory function may fail so long as the gut tube possesses the property of onward propulsion of the contained material its efficiency as a digestive apparatus is fairly well maintained. However, the gastrointestinal tube is not a rigid pipe through which material flows under the influence of gravity. Its behavior is essentially not that of a rigid tube (2). Gaskell (3) has drawn attention to the peculiar living property of the gut tube in that "every point of the intestine is in a state of activity which can be played upon and modified by impulses arriving at it from all portions of the gut above and below." The variously designated portions of the gastrointestinal tract exhibit wide variability in contractions, rhythmicity, irritability and tone, yet contractility is autonomous and the mechanism for peristalsis is intrinsically present in all parts of the alimentary tract. Alvarez (4) applied the idea of gradients of rhythmicity when he stated that "in the stomach and intestines contents move from regions of high rhythmicity, high irritability and high tone to regions of low rhythmicity, low irritability and low tone."

At certain points throughout its course we find certain specialized connections of nerve tissue which Keith has described and which behave in every way similar to the nodal tissue in the heart. Four of these nodal points are definitely established and four others may be surmised with reasonable certainty. Seriatim they are: 1, at the junction of the pharynx and esophagus (5); 2, at the cardiac orifice; 3, just beyond the pylorus near the ampulla of Vater; 4, at the duodenojejunal flexure; 5, the ileocecal sphincter; 6, about the midpoint of the transverse colon; 7, the junction of the pelvic colon and rectum; and 8, within the anal ring. The muscular activity of the gut tube is dependent, therefore, upon an intrinsic rhythmic tone with autonomous contractility and hence the contracting of any portion of the intestine will depend upon its tone, conductivity, irritability and intrinsic contractile rate. All muscular activity is influenced, in a large degree, by the available blood supply. Inflammatory processes are associated with hyperemia, and local cell life or the intrinsic metabolism of the cell is accelerated by nearby inflammatory processes (6) and hence one would expect in any inflammatory condition in the region of the cecum an increase in the irritability of the small intestinal tract above the point of inflammation. "An irritating lesion slows the progress of food coming toward it from above and hastens the progress of food that has passed it" (7).

The study of gastrointestinal symptomatology is an attempt to correlate symptoms with disturbances

*Read before the American Gastroenterological Association, Atlantic City, N. J., May 5, 1924. From the Department of Surgery, New York Postgraduate Medical School and Hospital.

in the orderly progression of material through the gut tube. Inferentially, this material may be accelerated in its passage, delayed, retained or obstructed. In the more gross manifestation of motor obstruction the symptoms are pronounced and clear cut, but when the symptoms are so protean as nausea, regurgitation, heartburn, pyrosis, vomiting, vague abdominal distress, they are so general and lacking in specific characteristics as to be difficult of interpretation. Yet, is it not with these minor fluctuations of gastrointestinal conduction that we are mostly concerned and which come to the physician under the generic title dyspepsia, but which represent the beginning of organic changes in the gut tube?

The stomach exercises, in the main, two fundamental functions, secretion and motion, and it is in variations in the degree of motor deficiencies that we look for the interpretation of the gastric symptomatology of chronically diseased appendix. Morphologically and physiologically the stomach divides itself into three parts: the upper or cardiac portion acting as a food reservoir; the antral portion concerning itself with active churning and muscular contraction, and the third portion or canalis gastricus being the delivery tube into the duodenum.

There is an intimate physiological relationship between the pylorus and the ileocecal sphincter. There is a great similarity in the functions exercised by both orifices. In both places we have a natural point of stasis—gastric retardation and ileal retardation. The delivery of chyme into the duodenum is followed by the delivery of chyle into the cecum and conversely the emptying of the ileum brings about a gastric evacuation. Hurst (8) demonstrated that the ingestion of food causes material to pass through the ileocecal valve and Cole (9) has drawn attention to the fact that he has observed a reactivation of duodenal peristalsis when the terminal ileum emptied its contents into the cecum. This gastroileal reflex has been closely studied by Keith, Hurst, Cole, Barclay and Alvarez and is of marked importance in maintaining the normal and natural retardation of food in the small intestines. At the ileocecal valve we have a change in chemical reaction from alkalinity to acidity. We have the greatest degree of bacterial life taking place in a medium of greatest fluidity and in an area that stands out by reason of the predominance of its lymphoid tissue.

From the surgical viewpoint the appendix represents an organ with a naturally deficient drainage and a mechanism that is at all times prone to low grade infections or irritations of bacterial origin. Adami (10) and his coworkers—Nichols and Ford—have demonstrated the continuous passage of leucocytes through the intestinal wall into the mesenteric lymph nodes and lymphatic system. These leucocytes carry bacteria or ingested particles of pigment or fat droplets. Obviously, most of the bacteria and leucocytes undergo lysis or destruction in Peyer's patches or in the first regional lymphatic glands. Occasionally a few, reduced in virulence, pass on into the portal system and find lodgment in the liver, thereby setting up irritating foci with the production of fibrous tissue. The bacteria do not proliferate in the liver but by their lysis produce irritating chemical substances which bring about fibrous tissue replacement. If the transmigration of bacteria through an intestinal wall is found as an occasional occurrence under apparently normal or healthy conditions the mechanism must be exalted in inflammatory conditions of the gastrointestinal tract. Conditions of irritation of the mucosa, types of colitis and ulcerated conditions of the alimentary tract must facilitate and accelerate this leucocytic migration.

Probably no organ within the abdomen is capable of producing such widespread peritoneal reactions and in so many diverse ways as an acutely infected appendix. The degree of peritoneal reaction is proportional to the acuity of the infection and obviously, minor degrees of infection of the appendix will produce the same character of peritoneal reaction which will vary in quality and kind only. Long before there is a perforation or an extravasation of intestinal contents from a diseased appendix we have a peritoneal irritation represented in an advancing zone of nonpathogenic anaerobic bacteria, the purpose of which is to bring forth the normal fibrinoplastic reaction of the peritoneum. In and about this infected area the omentum becomes attached or contiguous with it. The intestinal coils are agglutinated and held so that there is a resistant wall of infiltrated leucocytic fibrinoplastic material. The future of these barriers in the ordinary nonlethal, nonsurgical cases is that they are ordinarily absorbed, leaving behind, however, some memorabilia in the form of adhesions which become vascularized and produce varying degrees of physiological disability. The adhesive reaction in or about an area of infection may therefore be histologically divided into two stages, the difference between the two being one of vascularity and organization. The first stage of an adhesive reaction consists in an outpouring of fibrinoplastic material which is nonorganized, does not contain bloodvessels, and from which no lymphatic absorption takes place. After a variable interval this fibrinoplastic material is organized and converted into an absorbing, vascularized form of newly made peritoneal tissue. The omentum, also being peculiar in its vascularity, contains many converging veins of great length; these are thin walled and not adequately supported by fibrous connective sustaining tissue. Eiselberg (11) demonstrated how rapidly these veins are thrombosed and an epiploitis after hernia operations is a well substantiated clinical observation. Wilkie demonstrated the ease with which injury and thrombosis of the portal vein occurred. Upon mere ligation of some of the omental veins he produced punctiform hemorrhages in the stomach in thirty per cent. of the cases and in fifty per cent. hemorrhagic infarcts in the liver. This was particularly liable to occur following the ingestion of food for there is contraction and dilatation of the veins of the stomach and small intestine during the varied cycles of digestion. With the loaded stomach the gastric veins attain a diameter four times greater than that which obtains in a fasting stomach. If aseptic thrombi in omental veins showed these preeminent tendencies toward upper abdominal embolism how much greater must be this embolic tendency in a septic thrombosis. There is no definitely established route for the portal blood for Wilkie (12) was able to demonstrate that the course of the blood through the veins of the

portal system was capable of being diverted from the usual or direct anatomical route. The injection of oil globules in the veins at the right hand fringe of the omentum could be followed directly to the right gastroepiploic vein and, as a rule, the oil globules were carried to the liver directly. However, the low blood pressure within the portal system together with the absence of valves within the venous tributaries would permit occasional divarications in the course traversed by the venous blood from the omental veins. Oil globules could be made (by coughing or holding the breath) to move into the left gastroepiploic vein to form splenic infarct or to flow through the transverse gastric veins to the coronary vein at the lesser curvature.

In the course of our studies on changes in the liver associated or coincident with chronic abdominal inflammation we were able to demonstrate with remarkable frequency the association of periportal infiltration of either round cell or polymorphonuclear cell type in conditions of chronic disease of the appendix (27). The association of thrombosis of the periportal vein with acute septic conditions of the right lower quadrant has been of such frequent occurrence as to require no comment (13). We are inclined to believe that there is a constant absorption of bacteria themselves or their byproducts by means of the venous tributaries of the portal system and their subsequent conduction to the liver and upper abdomen. Feutterer (14) was able to recover bacteria injected into the appendiceal vein two minutes later in the bile. Braithwaite, however, was able to inject the lymph channels from the cecum up to and over the pancreas and stain the lymph glands in the cresent fold of the duodenum on the anterior surface of the pancreas. Franke (15) was able to inject the postpancreatic group of glands in that area between the duct of Santorini and the duct of Wirsung and if these two authors by experiments, one from below and the other from above, can infect the glands of the pancreas both front and back, then certainly the stomach and duodenum could be infected from any chronic abdominal infection by means of lymphatic anastomosis as depicted by Bartells. Craig (16) in a study on the lymphatics of the intestines was able to carry infectious material from the first and second portion of the duodenum up to and along the lesser curvature of the stomach. Franke (15), Sweet (17) and Pfeiffer have shown the intimate association of the appendix through lymphatic channels with the hilus of the right kidney. An interesting clinical experiment by Braithwaite (18) was the feeding of a kitten brought up on sterile food with material obtained from tuberculous glands in the human and on autopsy finding tuberculous adenitis extending from the cecum up to the group of glands beneath the antrum of the stomach, and he adduced that while most of the lymph from the ileocecal angle flows to the lumbar group of glands some may, however, pass up to and beyond the pancreas on to the wall of the pylorus or even stain glands of the cystic duct. Furthermore, Braithwaite was able to outline lymphatic conduction from the area of the ileocecal angle to the subpyloric group of glands and drew attention to involvement of the subpyloric glands in chronic infections of the appendix.

A great deal of confusion exists as to what is a chronic appendicitis. A pathologist has certain definite criteria that he will define as being essential for the pathological diagnosis of a chronically diseased appendix. A surgeon, thinking in clinical terms, is more likely to be impressed with the gross macroscopical picture of the appendix as he finds it than he is with the description of microscopical changes.

Chronic appendicitis may be defined as an appendix that is habitually infected and subject to recurrent inflammation. In studying our histories in operatively proved cases of chronic appendicitis we have arranged the symptoms into four groups: Group 1, patients with symptoms that were purely local and confined to the right lower quadrant; group 2, patients with symptoms that were manifestly reflex and referred to the upper abdomen, particularly to the stomach; group 3, patients with symptoms of upper abdominal distress similar to group 2 plus hematemesis; group 4, patients with symptoms of right lower quadrant pain plus irritable colon.

An occasional expression of a chronically diseased appendix is an irritable colon, the patient having a bowel movement immediately after the ingestion of food and due to a hypersensitive and hyperacting colon together with a loss of the normal retardation of ileal contents at the ileocecal valve. That there is a type of low grade inflammation of the appendix associated with fibrous or obliterative changes in the appendix and unaccompanied by local pain is an established fact. Pain confined to the region of the appendix and due to inflammatory changes within the appendix will depend primarily upon the degree of virulence and the amount of retention of appendiceal contents. This retention of appendiceal contents may be due to inflammations with occlusion as the result of edema or to alternate constriction formation as a result of previous inflammations. A common cause of partial retention of appendiceal contents is from angulation or kinking associated with low grade typhilitis or periappendicitis. "The distinction between the two portions of the appendix —the one thin, pale and empty, the other turgid, grossly enlarged and overful, is striking. At the junction between the two a firm band is found. In all forms its lumen is obstructed either by definite constriction or external attachments" (19).

It is surprising to note that fully one third of our patients complaining of upper abdominal distress had had previous attacks of abdominal pain of rather an acute nature, which could be reasonably interpreted as being due to appendicitis. Local pain in the area of McBurney's point was either present or given in the history of approximately eighty per cent. of all of the cases and when present at the time of examination was almost invariably associated with tenderness on fluoroscopic examination. The upper abdominal symptoms embraced pain which was more frequently in or about the region of the navel than above. It was a pain of variable intensity, more often a complaint of distress with a definite radiation downward and to the right lower quadrant and the patient in indicating the site of the pain would ordinarily place the entire hand with the centre of the palm overriding the umbilicus. The pain was manifestly made worse by the inges-

tion of food and fully fifty per cent. of the cases indicated that certain articles of food were capable of making the pain worse (20). There was no constancy in these articles of diet and depending upon the patient's memory and observation an article that could be eaten with comparative freedom at one time would on another occasion produce a greater degree of pain. There was no periodical or rhythmic recurrence of the pain in relation to fixed hours of eating. There were periods of days when there was no distress whatsoever and symptoms which might be present on one day would be absent on the following day and thereafter for a variable period of a week to ten days or six weeks. Throughout this history there was at all times a capriciousness as to the time of onset of symptoms and their relation to the time of food ingestion and in general there was exhibited a variability of symptoms that is not present in ulcer. Vomiting is after all a rare sign of ulcer of the gastroduodenal segment yet in appendiceal dyspepsia it is probably the most constant of all.

Not an uncommon history is that of pain, coming on suddenly, irrespective of the quality of the food, epigastric in type, radiating downward to the right lower quadrant and followed by repeated attempts at vomiting. The material vomited is first food material and then glairy white mucoid material, rarely is it tinged with duodenal reflux. In gastroduodenal ulceration we have ordinarily two processes occurring simultaneously—a destruction of tissue and a healing of tissue by fibrous tissue replacement—the interplay of these two factors depending upon the age and concomitant tissue reaction of the individual. The production and healing, or cicatrization of an ulcer requires a definite interval of time and if an ulcer is producing symptoms the outstanding feature in the symptomatology is the regularity of the symptoms produced and the more or less constant repetition day after day over a period of time under the same conditions of food intake. The element of regularity is exhibited in approximately ninety per cent. (21) of all true gastroduodenal ulcers. If we analyze a sufficiently large group of cases we will find that there are four symptoms which are particularly noteworthy by reason of their constancy, their periodicity and their precise and regular daily recurrence: 1, pain, truly epigastric, of variable intensity, is almost always present; 2, the onset of this pain bears a definite time relationship to the ingestion of food; 3, this time relationship after being established is periodical in recurrence day after day upon the ingestion of the same articles of food; and, 4, a definite chronicity usually estimated by weeks. It is the absence of regularity in the symptomatology of the chronically diseased appendix that differentiates it from gastroduodenal ulceration.

It is interesting to note that of five hundred cases reported by Deaver (22) 161 patients were operated upon in an acute phase of the disease and the common observation of the patient with chronic dyspepsia of many years' duration being entirely cured following an appendectomy for acute appendicitis is commonplace and requires no comment. Furthermore, the same author in regard to the specific question as to the relationship of disease of the gall bladder and appendix found that ninety per cent. of his diseased gallbladders had demonstrable pathological changes in the appendix and sixty-one per cent. of his ulcer cases had pathological changes in the appendix.

Moynihan (23) and later Braithwaite (18) have described three stigmata of a chronically diseased appendix that may ordinarily be observed through an upper abdominal incision: 1, the "tumultuous contracture" of the antral portion of the stomach. One may see during the laparotomy marked incisural contractures dividing the cardiac from the antral portion of the stomach. These gastric indentures remain fixed for a short period of time and although they may occur in other conditions they are more habitually expressed in a stomach that shows hyperirritability as the result of a chonically diseased appendix. 2. The remarkable hypervascularization of the pylorus, and, 3, hyperplasia of the subpyloric group of glands. These glands are beautifully pink in color, and represent a mild hyperplasia. We have observed in a number of cases a thin, vascularized film extending across the pylorus that may be elevated with a thumb forceps, is nowhere restraining and is nowhere organized. In connection with the contraction above we have thought that the pyloric ring itself exhibited an increased tonus. This is a personal equation and is open to wide interpretation.

An associated finding in many cases is the fact that the gallbladder adjacent to this hypervascularized pylorus shows suggestive signs, at any rate, of a beginning pathological change. The wall is somewhat thickened, the green color is faded into a blue and around the area occupied by the gallbladder are white radiating lines of beginning interstitial hepatitis or glissonitis. Eusterman (24) reports 1,078 cases of gastroduodenal ulcer with forty per cent. exhibiting disease of the appendix and 9.7 per cent. disease of the gallbladder. Mayo (25) reports that the average duration from the onset of symptoms to operation in appendicitis, cholecystitis and cholelithiasis reveals respectively two, four and nine tenths, and six and five tenths years. The average case of cholecystitis lies between the average in appendicitis and cholelithiasis.

In the chronic appendix that has produced the ulcer syndrome we have noticed the uniform turgescence of the appendix when viewed as a whole.

In exposing the appendix we have noted a number of changes which we estimate as criteria of pathological change in the appendix: 1, the alternate areas of constriction and dilatation occurring throughout the appendix, or in its distal half which we have interpreted as being due to intermittent attacks of inflammation with cicatrization; 2, a marked hypervascularization of the appendix; 3, an obliterative process usually involving the terminal centimetre and proximal to the obliteration a bulbous distention; 4, the presence of adhesions, usually on the inferior external surface and ordinarily producing a kinking with vascular and luminal obstruction; 5, the presence of a fair degree of glandular hyperplasia in the group of glands between the ascending colon and terminal ileum.

In conclusion, if the appendix were chronically infected and capable of deranging the physiology of

the upper abdomen we would expect that there might be certain liver changes in long continued inflammation. We believe, from the material that we have collected, that long continued infection of the appendix is associated with certain pathological findings in the liver (26), that these changes in the very mild cases embrace a periportal infiltration, first of round cells, later polymorphonuclear cells and finally some degree of hepatic degeneration with fibrous tissue replacement, giving a picture of a mild degree of periportal fibrosis. In more chronic cases, or those of somewhat greater infectivity but still essentially chronic cases, in addition to the periportal infiltration there is peribiliary infiltration and the round cell infiltrative process may pass from the periportal to the peribiliary systems. In this group we invariably find the gallbladder exhibiting certain early pathological changes and the liver exhibiting the surface marking of an interstitial hepatitis.

The author's references will appear in his reprints.

Carcinoma of the Papilla of Vater*

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Carcinoma of the papilla of Vater is today a fairly well recognized pathological and clinical entity, and in the past decade a considerable number of cases have been observed and reported, showing that the disease is not such a rarity as has been supposed. The lesion tends to produce very marked and characteristic symptoms even in its incipiency and, according to Kausch (1), because of its peculiar site, permits of the possibility of earlier diagnosis than almost any other form of internal cancer. Further, these carcinomata seem to be tumors of a relatively benign character, as shown by their slow growth and late metastases. In spite of these facts, the history of the treatment of this disease has been anything but a brilliant one, while the record to date of the radical operative attempts even in early, unadvanced cases is almost disastrous. It is in the hope of stimulating further research toward the goal of improving the results of radical excision that the following case is reported and the appended suggestions made.

Case.—J. H. S., male, aged thirty-eight, was admitted to the Lenox Hill Hospital on June 12, 1923. There had been no history of typhoid fever, but as a child of eight or nine years he had had an intermittent fever with jaundice which was diagnosed as malaria. Since childhood he had suffered from migraine attacks. For many years he had complained of hyperacidity. In March, 1923, he had an attack of severe epigastric pain radiating through to the back. This pain lasted about three hours and there was no vomiting. A second, similar attack followed about three weeks later, and a third attack one week after that. The last or fourth attack began three and a half weeks before admission to the hospital, with the same type of pain, though more severe. The pain also lasted much longer—nearly twelve hours. There was no fever or vomiting, but about two weeks after the attack or about one week before admission, he became slightly jaundiced. This jaundice gradually increased and then began to subside. He had lost no weight. Patient was a large man, well nourished, weighing 240 pounds. When first seen the patient showed slight jaundice with a definite subicteric tint to the sclera and skin. There was some sensitiveness and rigidity in the right hypochondrium, although no mass was palpable. Temperature and pulse were normal. The urine showed a faint trace of bile. Gastric contents showed hydrochloric acid, 40; total acidity, 65. String test showed a slight blood stain in the stomach. Bile obtained with the duodenal tube in the fasting condition was turbid and contained pus corpuscles and a considerable amount of cholesterin crystals. Röntgenographic examination showed no evidence of cholelithiasis.

With a provisional diagnosis of subacute cholecystitis with probable cholelithiasis, operation was performed on June 16, 1923. Through a typical right hypochondriac incision a much distended, thickened and injected gallbladder was exposed. It showed definite evidences of active inflammation. The organ was unusually large and tense, but no adhesions to it were noted. No calculi could be palpated in the gallbladder, ducts, or at the papilla. There was no dilatation of the hepatic or common bile ducts. The foramen of Winslow was patent and the pancreas was not indurated. The liver appeared normal. There was no evidence of tumor, ulceration or cicatrization in the stomach, pylorus or duodenum. The pylorus was widely patent. The appendix lay to the inner side of the cecum, was somewhat long and bound down by dense adhesions. A typical cholecystectomy was done, during which it was noted that the cystic duct was rather friable. The appendix was also removed. A gauze tampon was placed in the liver bed of the gallbladder and a cigarette drain into Morison's pouch, both being surrounded by a rubber dam. The abdominal wound was closed in the usual fashion. Gross examination of the gallbladder showed it to be a much thickened, distended organ with a definitely injected serosa and a papillary, mossy mucous membrane which suggested tripe. The color of the mucous membrane was yellowish. The gallbladder contained a thick, greenish, turbid bile. The appendix showed the usual changes of a chronic appendicitis. The microscopic report on the two organs was chronic cholecystitis and chronic catarrhal appendicitis.

There was slight biliary drainage from the tampons for a few days, but this ceased after about the

*Read at the Twenty-Seventh Annual Meeting of the American Gastroenterological Association, May 5-6, 1924.

tenth day, the patient making what appeared to be an uneventful recovery. The slight jaundice existing before the operation entirely disappeared and the sutured portion of the wound healed by primary union. About three weeks after operation the patient complained of a little gastric distress and hyperacidity, and there were slight evening rises of temperature to about 100°. On July 9th, twenty-three days after the operation, the day patient was to leave the hospital, there was a sudden profuse, biliary drainage from the wound, suggestive of a suddenly developing obstruction. The patient had clay colored stools and the sinus continued to discharge clear bile in profuse quantities until July 28, 1923, two days after he left the hospital, when the drainage ceased as suddenly as it had begun, suggesting that the obstruction had been relieved. While the biliary drainage persisted the patient became rather depressed and lost forty-six pounds in weight. The patient now began to improve. His appetite was good, his stools were normal, and his mental condition was much better. By September 15th he had regained eleven pounds in weight. About this time he had an attack of discomfort in the epigastrium, but no real pain. Associated with this attack there was some fever, flatulence and offensive stools. Colonic irrigations were taken and he again improved after about two weeks. Afternoon temperatures again recurred, with chilly sensations in the morning. The stools were again light colored and the patient claimed his urine was darker. Patient was seen on October 12th and readmitted to the hospital. His temperature was 102.2° and his pulse 96. He was obviously ill. His weight was now 199 pounds. The abdominal scar was thoroughly healed. There was no abdominal sensitiveness or other definite local abdominal signs. He was not jaundiced. He was kept under observation until November 1st, during which time he had several sharp rises of temperature up to 102.5° to 104°, preceded by chilly sensations or really definite chills. Associated with the true chills were rather marked nausea and severe retching. Between the rises of temperature there were afebrile periods varying from one to four days. He did not become icteric and the urine was examined repeatedly for bile and was always negative. The stools were light colored but bile was found in them. The Widal examination was negative. The blood smear was negative for plasmodia. The white blood cell count was 10,200, with 75 per cent. polynuclears. The blood culture was sterile. Röntgenographic examination showed a widening of the space between the lower border of the liver and the right diaphragm and some irregularity of the under surface of the liver, but no direct evidence of cholelithiasis. From October 13th to October 28th, medical biliary drainage was instituted for both therapeutic and diagnostic purposes. It was performed daily, as follows, the various liver stimulants, magnesium sulphate, peptone, glucose and olive oil being used.

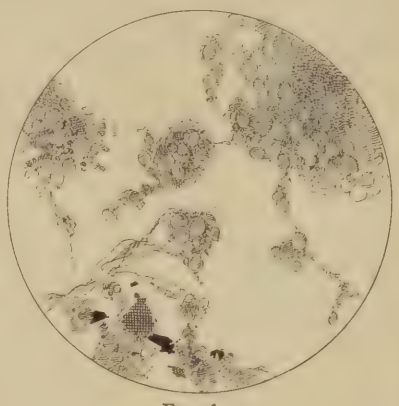

Fig. 1

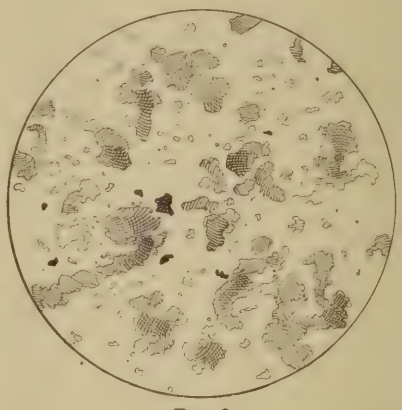

Fig. 2

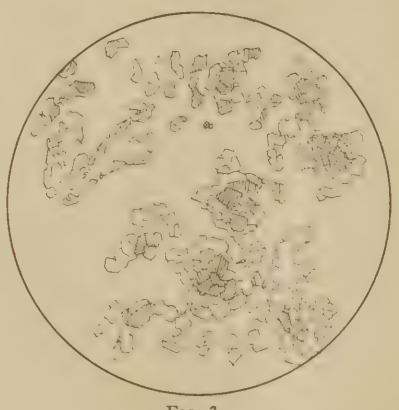

Fig. 3

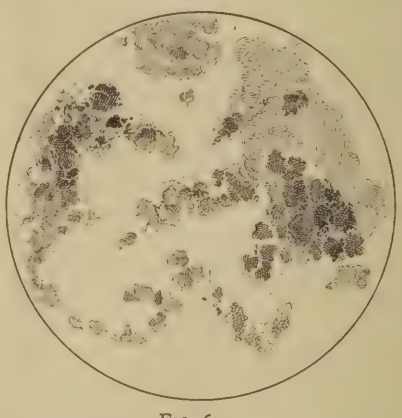

Fig. 6

Fig. 1.—Microscopic picture of the tiny blackish concretions of pinhead size found in bile aspirated by duodenal tube. Brownish red, somewhat rounded crystals resembling bunchberries.

Fig. 2.—Cholesterin and calcium bilirubin crystals and mucus found in bile aspirated by duodenal tube.

Fig. 3.—Sandlike particles of cholesterin and calcium bilirubin crystals found in bile aspirated by duodenal tube.

Fig. 6.—Microscopic picture of pinhead sized concretion in bile flowing out of common bile duct at operation. Same bunchberry appearance of crystals noted.

October 13.—Fasting: Light watery yellow, very slightly turbid. Alkalinity =25; Amylopsin=3; Steapsin =2; Trypsin= 5. After magnesium sulphate (twenty-five per cent.) sixty c. c.: Moderate color reaction beginning at ten minutes and ending at thirty-one minutes. Total return sixty c. c. in thirty-one minutes.

October 14.—Fasting: Dark yellow, very turbid. Alkalinity=15. After peptone (five per cent.) sixty c. c.: Slight double color reaction: 1. Beginning at ten minutes and ending at twenty-one minutes, amount being twenty-five c. c. 2. Beginning at twenty-eight minutes and ending at thirty-three minutes, amount being thirty c. c. Total sixty-five c. c. in thirty-three minutes. Calcium bilirubin and cholesterin crystals, also mucus found.

October 15.—After glucose (twenty-five per cent.) sixty c. c.: Good color reaction, beginning at sixteen minutes and ending at twenty-eight minutes.

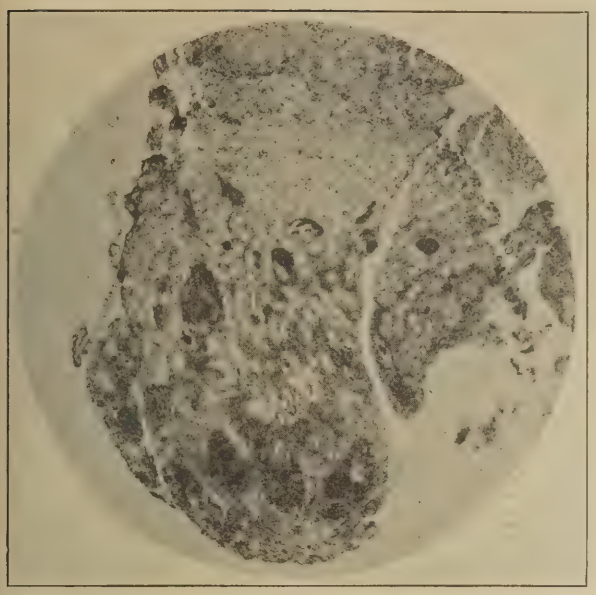

FIG. 4.—Microscopic appearance of tumor infiltrating duodenum (low power). Tissue taken from edge of tumor. Note general topography, submucous hemorrhages, normal glandular structure and tumor tissue beneath, with some necrosis of the more superficial area.

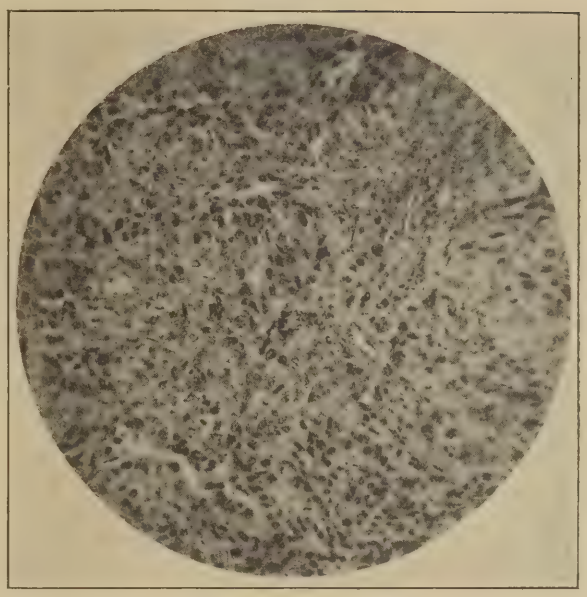

FIG. 5.—Microscopic appearance of tumor tissue (high power). Note mitotic figures, round cell infiltration, and aberrant ducts.

amount being thirty c. c. Total fifty c. c. in thirty-five minutes. Cholesterin and calcium bilirubin crystals, also mucus present.

October 16.—After peptone (five per cent.) sixty c. c.: Good color reaction, beginning at fourteen and ending at twenty-one minutes. Total fifty c. c. in twenty-two minutes. Tiny sandlike concretions found containing cholesterin and calcium bilirubin crystals, also mucus.

October 17.—After olive oil, thirty c. c.: Double color reaction: 1. Beginning at ten and ending at fifteen minutes, amount being thirty c. c. 2. Beginning at eighteen and ending at twenty-five minutes. Total sixty-five c. c. in twenty-five minutes. Sand concretions with calcium bilirubin crystals found.

October 18.—Fasting: Dark brownish yellow, very turbid. Alkalinity=20. After peptone (five per cent.) sixty c. c.: Slight color reaction beginning at twenty and ending at thirty-eight minutes; amount thirty c. c. Total forty-five c. c. in thirty-eight minutes. Brown and blackish sandlike particles found.

October 19.—Fasting: Dark brownish yellow, very turbid. Alkalinity=20. After magnesium sulphate (twenty-five per cent.) sixty c. c.: No color reaction present. Total thirty-five c. c. in twenty-two minutes.

October 20.—After glucose (twenty-five per cent.) sixty c. c.: Trace of double color reaction present: 1. Beginning at ten and ending at sixteen minutes, amount being fifteen c. c. 2. Beginning at seventeen and ending at twenty minutes, amount being fifteen c. c. Total thirty c. c. in twenty minutes. Black sandlike particles found.

October 21.—After glucose (twenty-five per cent.) sixty c. c.: No color reaction present. Total forty c. c. in forty minutes.

October 22.—Fasting: Dark brownish yellow, very turbid. After glucose (twenty-five per cent.) sixty c. c.: No color reaction present. Total fifty c. c. in twenty minutes.

October 23.—Fasting: Dark brownish yellow, very turbid. Alkalinity=30; Amylopsin=6; Steapsin=2; Trypsin=1. After glucose (twenty-five per cent.) sixty c. c.: Moderate color reaction present, beginning at sixteen and ending at twenty-five minutes, amount being thirty-five c. c. Total sixty c. c. in thirty-five minutes. All specimens were clear. Black sandlike concretions present.

October 24.—Fasting: Dark yellow, very turbid. Alkalinity=20. After glucose (twenty-five per cent) sixty c. c.: Slight color reaction present, beginning at fifteen and ending at twenty minutes, amount being thirty c. c. Total fifty c. c. in thirty minutes. No black sandlike particles seen today.

October 25.—Fasting: Dark brownish yellow, very turbid. Alkalinity=25. After glucose (twenty-five per cent.) sixty c. c.: No color reaction present. Total sixty c. c. in forty minutes.

October 26.—Fasting: Dark brownish yellow, very turbid. Alkalinity=20. After glucose (twenty-five per cent.) sixty c. c.: No color reaction present. Total thirty-five c. c. in forty-seven minutes.

October 28.—Fasting: Dark brownish yellow, turbid. Alkalinity=25. After glucose (twenty-five per cent.) sixty c. c.: No color reaction present. Total thirty-five c. c. in eighteen minutes. Blackish sandlike particles, containing mucus, calcium bilirubin and cholesterin crystals.

It will be seen from these findings that for the first four days all the liver stimulants, especially glucose, produced a good color reaction or dark colored bile, in spite of a previous cholecystectomy. From October 18th on the same liver stimulants began to show weaker reactions and eventually none at all, the reaction from glucose persisting the longest. This clearly indicated a disturbance of liver function. The flow of bile was free and quite normal in quantity. In the fasting state, it was, at times, rather turbid. In it there were often found tiny sandlike concretions, usually of blackish color. Microscopically these were found to be conglomerations of calcium bilirubin and cholesterin crystals and mucus. (Figs. 1, 2, and 3.) The duodenal contents contained no blood

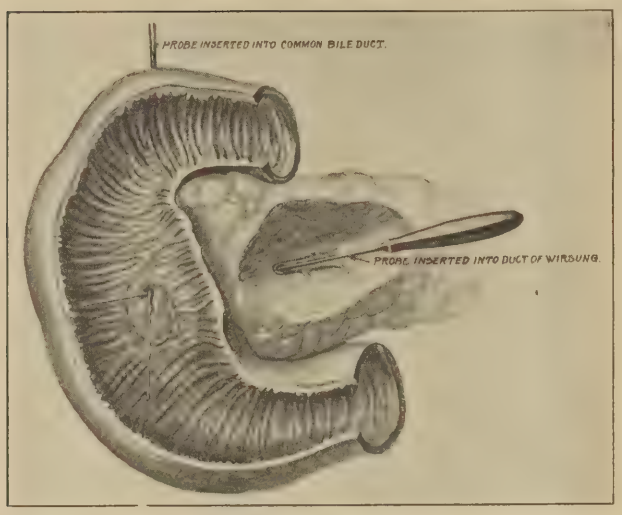

Fig. 7.—Gross appearance of carcinoma of papilla of Vater with probes inserted into the common bile duct and duct of Wirsung.

and on culture showed no typhoid bacilli. No therapeutic result was noted from this biliary drainage with the duodenal tube.

After numerous consultations, reoperation was decided upon with a provisional diagnosis of infectious cholangitis, probably due to a concretion in the common bile duct, possibly overlooked at the first operation. This impression was substantiated by the history of the sudden postoperative development of profuse biliary drainage from the wound and its quite as sudden cessation, suggesting a movable calculus in the choledochus. Operation was performed on November 2, 1923. The old scar was excised and the usual dense adhesions of the structures in the right hypochondrium were found. No pathology was noted in the liver, stomach or pylorus. With some difficulty the common bile duct was exposed and found to be somewhat shortened by contraction, decidedly dilated, and with a definitely thickened wall. The pancreas seemed slightly indurated, and a rather firm gland was seen and palpated near the junction of the common bile duct and duodenum. On palpating the hepatic and common bile ducts no calculi were felt. The common bile duct was then opened between two guy sutures and a rather unusual amount of exceptionally light colored bile welled out under considerable pressure, definitely indicative of, at least, a relative obstruction, to which the biliary system had sufficiently adapted itself to prevent a recognizable icterus. The bile contained numerous black, granular concretions, similar to, but rather larger in size than those found in the duodenal contents previously. A culture of the bile was taken. An attempt was made to probe the common bile duct but this was unsuccessful. At the tip of the probe, rather low down in the pancreas, was felt à hard, rounded nodule about the size of the distal phalanx of the little finger, which at first gave the impression of being a calculus impacted at the papilla. Attempts to dislodge this mass with the probe, forceps, or by milking upwards were unsuccessful, so a transverse incision was made through the duodenum immediately opposite the mass. On examination it was found that this mass was not a calculus but a hard, infiltrated ulceration with a punched out, craterlike floor and with jagged, elevated and everted edges. The ulcer just about admitted the tip of the examining finger and apparently corresponded to the papilla. This mass was densely adherent to the pancreas and the infiltration extended into the pancreatic tissue. Just to the right of the head of the pancreas and adherent to it, was palpated a separate, hard nodule which seemed to be an infiltrated mesenteric lymph gland. The probe, passed through the opening in the common bile duct, could now be guided into the duodenum, passing almost directly through the centre of the ulcer. The probe was moved about to dilate the duodenal opening of the common bile duct and several specimens of the edges of the ulcer were taken for examination by means of a punch. The duodenal incision was closed in the usual manner and the wound in the common bile duct was partially sutured. Proper drainage was instituted and the abdominal wound sutured.

Gross examination of the tissue removed from the ulcer at the papilla showed it to be of rather firm consistency and suggestive of malignancy. The microscopic examination confirmed this impression. It was a typical adenocarcinoma of the papilla (Figs. 4 and 5). The culture of the bile showed bacillus coli communis. Microscopic examination of the small concretions removed with the bile from the common bile duct gave much the same picture as that found in the examination of similar particles in the bile aspirated by the duodenal tube before operation (Fig. 6).

The patient rallied well from the comparatively trifling shock of the operation, but about two weeks after operation began to vomit rather large quantities. This vomiting lasted for three days. The sutured portion of the wound healed by primary union and the bile drainage was quite clear. There was no fever after the slight postoperative rise. In spite of the cessation of vomiting and the absence of fever, the patient failed perceptibly. On November

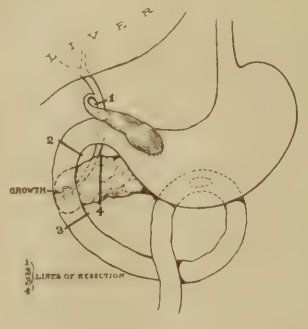

Fig. 8

Fig. 9

Fig. 8.—Proposed operation for radical excision of carcinoma of papilla (after Kehr). First and second stages. Cholecystogastrostomy and posterior retrocolic gastroenterostomy. Lines of resection indicated: 1. Through choledochus. 2. and 3. Through second portion of duodenum above and below papilla. 4. Through pancreas.

Fig. 9.—Proposed operation for radical excision of carcinoma of papilla (after Kehr). Third stage. Circular resection of second portion of duodenum including papilla, with closure of choledochus and gastric stump of duodenum and pancreatoduodenostomy.

30th a right parotitis developed. The temperature rose rapidly to 105 to 106° with a pulse of 140 to 150, the patient going into a marked collapse. On December 2nd, just one month after the second

operation, the patient died, apparently from a sepsis of some sort.

The postmortem examination showed an oval carcinomatous ulceration around the papilla, involving the entire duodenal wall. The tumor was rather flat and measured about two cm. in its greatest diameter. The neoplastic infiltration had entered the head of the pancreas. The orifices of the common bilt duct and the duct of Wirsung were patent (Fig. 7). In the mesentery of the duodenum to the right of and adherent to the head of the pancreas, was a hard, whitish nodule of about the size of a large pea, apparently an invaded mesenteric lymph node. There were no other metastases. In front of the duodenum and communicating with its lumen through a small perforation in the suture line, was a large abscess containing thick, grayish pus and sloughing tissue. This localized peritonitis was undoubtedly the cause of the sepsis which was the immediate cause of death. Microscopic examination of the primary tumor showed the same pathological features as the specimens obtained at biopsy and the nodule in the mesentery of the duodenum was composed entirely of tumor tissue,of the same morphology as the primary growth.

The most striking feature in this case was the nearly total absence of jaundice except for a slight attack at the inception of the illness. After cholecystectomy even this subsided, in spite of the fact that the lesion at the papilla was still advancing. This must be accounted for by the fact that the tumor was an ulcerative type and not actually obstructive in character—as demonstrated at operation and again at the postmortem examination. The next point of interest was the relatively good condition of the patient even after the onset of the cholangitis. In most cases of carcinoma of the papilla, marked and progressive jaundice is a characteristic and early symptom, even with very small tumors, and if the pancreatic duct is involved, rapidly advancing malnutrition occurs in addition. Finally, in our case the diagnosis was made during life in the relatively early stages of the disease. In fact, after the diagnosis was definitely established, the possibility of radical excision was considered; but, of course, as matters developed, no further procedure was possible. It was greatly to be regretted that this diagnosis had not been established at the first operation when undoubtedly the tumor was already present. The patient was a young man, his condition at that time was excellent, he was practically nonicteric, he was not infected, and the gallbladder was still present to be used for anastomotic purposes. Under such satisfactory conditions and with such a comparatively insignificant lesion, a most favorable outcome of radical extirpation could have been expected.

The case certainly teaches that the possibility of the existence of carcinoma of the papilla of Vater should always be borne in mind at all gallbladder operations, especially where icterus is or has been a symptom. If there is any suspicion that this is the case, exploratory duodenotomy, with probatory excision and preferably immediate microscopic examination of the frozen section is indicated. Then, if the diagnosis is established beyond the shadow of a doubt, it should be decided as to whether radical or palliative treatment should be instituted and what method or procedure should be selected.

The recent literature on the radical treatment of carcinoma of the papilla of Vater is rather discouraging. The most complete summary within the last few years is made by Brütt (2), who has added seven cases of radical operation to the nineteen collected by Melchior (3), among which was one for benign tumor. Of the twenty-five cases of carcinoma, eleven died after operation, making a postoperative mortality of forty-four per cent. The methods used were:

1. Transduodenal extirpation of the papilla—eighteen times with seven deaths.
2. Resection of the second portion of the duodenum—four times with two deaths.
3. Retroduodenal extirpation of the distal end of the choledochus, including the papilla—three times with two deaths.
4. Excision of the papilla through the dilated choledochus by inversion—once, with operative recovery.

In 1901, William J. Mayo (4) reported the first successful transduodenal extirpation of a carcinoma of the papilla of Vater. The preliminary cholecystostomy was done to relieve the jaundice, and the growth was removed after duodenotomy, partly with the knife and partly with the cautery. Three weeks after the extirpation the biliary fistula completely closed, the stools became normal in color, the patient gained weight rapidly, and remained well for about one and a half years. Then pain and icterus developed, due to a recurrence in the pancreas and mesenteric lymph nodes. Temporary relief followed a cholecystoduodenostomy.

The two successful resections of the second portion of the duodenum which have been reported were made by Halsted (5) and Kausch (6). Both patients died of recurrence about three quarters of a year after operation. In Kausch's case the development of an infectious cholangitis also contributed to the eventually fatal outcome.

Crohn (7), in 1914, in an analysis of new growths involving the terminal bile and pancreatic ducts, made a careful study of two cases of carcinoma of the papilla of Vater including postmortem examination. He pointed out the possibility of diagnosis of the obstructive and ulcerating types of the lesion and called attention to the striking symptomatology of the two forms. He emphasized the great value of the duodenal tube as a diagnostic agent, reviewed the literature to that time, and urged the surgeon to attempt early radical operative measures.

A most interesting contribution on the subject is made by Lewis (8) who reports on the end result of a transduodenal extirpation of an adenocarcinoma of the papilla of Vater performed by Howard A. Kelly and Curtis F. Burnam of Baltimore. The patient was alive and well eight and a half years after operation.

Very recently Abell (9) has reported on three cases, in two of which palliative operations were done, and in the third radium applied by a very ingenious method. In all three cases the results were quite satisfactory. One of the cases was still alive and quite well four years and one month after the onset of definite symptoms, three and a half

years after cholecystoduodenostomy and ten months after a second operation, namely a gastroenterostomy for duodenal obstruction.

It is obvious that the most cleancut, rational surgical procedure in the sessile, infiltrating type of carcinoma is the resection of the second portion of the duodenum, including the papilla. Of course this is an operation of considerable severity, and should not be attempted in one stage even if the case is most favorable, well nourished and not jaundiced. The great surgical problem is the proper disposition of the choledochus and pancreatic ducts. We would favor a technic similar to that suggested by Kehr (10 and 11)—first the establishment of a cholecystogastrostomy, and if the patient is not jaundiced at the time, a posterior retrocolic gastroenterostomy. If the patient is jaundiced, the gastroenterostomy should be postponed until after the jaundice has subsided. The radical excision of the second portion of the duodenum, including the distal parts of the choledochus and of the duct of Wirsung with or without a portion of the head of the pancreas, could then be performed when the patient's condition had so far improved as to permit of this very severe procedure. The proximal ends of the choledochus and duodenum should be closed and the end of the duct of Wirsung or the pancreas stump invaginated into the distal portion of the duodenum. For the pancreatectomy and pancreatoduodenostomy, Coffey's (12) method could be employed. The illustrations (Figs. 8 and 9) clearly show the proposed technic. Of course this operation is not indicated in every case but would have been necessary in a case such as the one described, with the infiltration extending into the head of the pancreas. There are certain forms of the disease in which the tumor is more pedunculated, and a simpler, less dangerous procedure will suffice. After preliminary cholecystogastrostomy, gastroenterostomy or both, if necessary, such growths can be readily excised transduodenally with or without a portion of the choledochus or duodenum, but without the necessity of an actual circular resection of the gut.

Obviously radical extirpation will only be possible in those cases in which the disease is not too far advanced and in which the condition of the patient permits of a severe surgical procedure. In the others, a palliative measure, such as an anastomosis between the gallbladder and stomach, duodenum or jejunum, is not only indicated but very much worth while. If necessary a gastroenterostomy may be added. Erdmann and Heyd (13) report a case of carcinoma of the papilla, operated on by the former, in which a cholecystostomy and posterior gastroenterostomy were done and then at a second operation the cholecystojejunostomy was performed. The patient gained twenty pounds after the second operation, remained well eleven months and lived for another month, death occurring about nineteen months after the initial symptoms, fifteen months after the first and twelve months after the second operation. Judging from Abell's experience, the direct application of radium by duodenotomy is certainly worth considering. Emanation needles may be used or, according to Abell, a capsule can be anchored to the growth by a catgut suture and later withdrawn by a string through the mouth.

We do feel, however, that wherever possible, radical removal should be the procedure of choice and that our future efforts should be directed toward gaining further experience along these lines and improving the technic of the procedure. Again we wish to emphasize the point that these growths as a rule produce a prompt, definite and pathognomonic symptomatology with the great chance of early diagnosis, certainly at operation, or possibly even before with the aid of the x ray and the duodenal tube—perhaps even more favorable than in tumors of the brain or spinal cord. We also wish to reiterate the generally conceded fact that these carcinomata are usually tumors whose malignancy is of an exceptionally low order—growing very slowly and metastasizing extremely late. Although none too encouraging, the attempts at radical cure give us a ray of hope, and a few of the reports are truly inspirations toward further research. Surely, it is a sad reflection on the present, supposedly advanced state of our surgical knowledge, if we should be forced to make a confession of weakness and stand by, seemingly powerless really to help, watching the tragedy of a robust and, as in our case, a young individual, succumbing to a minute, insignificant little tumor, often not larger than a pea—a tumor which all authorities agree is of a comparatively benign nature, but whose removal, because of its peculiar situation—simply requires the solving of certain slightly more difficult technical questions than are usually presented.

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The Key to the Abdomen

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The problems encountered in the surgery of the abdomen are so important that they call for the most careful study, and demand that the surgeon shall render himself familiar with the great progress that has been made in their treatment in recent years.

I believe that the key to the entire abdominal situation lies in the recognition of the principles involved in the condition which Arbuthnot Lane called chronic intestinal stasis, the details of which he has taught for the past twenty-five years. The quicker we can free ourselves from our habitual conservative ideas, the sooner will the whole medical and lay community realize the great importance of this work. Knowledge is more often bought at the price of failure rather than by success, and it is with this object that I am referring to a series of over fifty cases of intestinal stasis which I have treated by operation. I shall briefly enumerate the measures which I have employed in my efforts to deal with the several conditions which may best be described as the sequence of chronic intestinal stasis.

SIMPLE APPENDICECTOMY FOR CHRONIC APPENDICITIS

Most surgeons will only too readily admit that a careful investigation of the results of the removal of the appendix in socalled chronic appendicitis are ignominious failures. How often after a brief interval do their patients return to them or perhaps more frequently to some other medical man, complaining of precisely the same symptoms which originally led them to seek advice and the surgeon to operate! The only result of the operation of appendicectomy in too many cases of socalled chronic appendicitis is, unfortunately, a variable number of postoperative adhesions which are a frequent source of trouble. I know from painful experience that if the whole of the intestinal tract had been carefully examined at the operation one or more bands controlling the large bowel and the end of the ileum would have been discovered and divided, and a perfect result obtained.

Appendicectomy had been previously performed in four of the cases which came under my observation for a continuance of the symptoms which existed before the removal of the appendix and upon which I operated subsequently. When I opened the abdomen I found in each of these four cases a definite first and last kink, which I divided, with the result that the patient was freed from pain and was restored to health.

It is perfectly obvious that the incisions in the right groin commonly employed by surgeons for the removal of chronic appendix are so placed and so limited in extent that it is quite impossible to make a thorough examination of the intestines through them, and in consequence their use completes the tragedy so far as the patient is concerned. If a median or paramedian incision of sufficient length had been employed, the true origin of the trouble would have been discovered by the surgeon only, however, if he were familiar with the structural changes which exist in stasis. The primary and most important obstruction is situated in the end of the iliac colon, where it forms what is suitably described as the first and last kink and other secondary kinks might also be present. After reviewing the whole series of cases the continued employment of what we may call, perhaps, the cosmetic incision would be comic if it were not almost criminal.

CECOPLICATION AND CECOPEXY

The next effort which I made was to perform one or both of these two operations which were popular at the time, relying upon what I now recognize to be an incorrect supposition that the cause of stasis existed either in the pendulous or baggy cecum or a hypermobile section of the colon. This method of operation originated with Rovsing of Copenhagen and he had many followers in England and abroad. That this conception was entirely wrong was proved conclusively by the results in a series of thirty-two cases in which I had employed this procedure. The successes I obtained were negligible. I may say that I have seen many cases which have been operated on by other surgeons with no better result, so that my failure is not unique. The reason was that the real cause was neither searched for nor remedied: indeed, in the light of Arbuthnot Lane's work, everything possible had been done to aggravate rather than alleviate the static condition. Whereas the patient originally possessed one or more intestinal kinks, he had superimposed on him many new adhesions of postoperative origin. The only thing he lost was his check.

COLECTOMY

I performed this operation in five instances. One of the disadvantages of this operation is shock which in some few cases may be considerable and persistent. This may, however, be minimized by the abundant injection of normal saline into the axillæ. This should be commenced as soon as the patient is sufficiently insensitive not to feel the prick of the needles, and it should be continued during the whole operation. Perhaps the complication which causes the surgeon and patient most trouble is the formation of inflammatory adhesions, as is all other intra-abdominal operations, evidence of which may not appear for many years. Three of the five cases did well, one gave a very poor result and one patient died. The explanation of the failures lay possibly in faulty technic and a want of familiarity with the operation. Colectomy is only called for where there is extensive ulceration or extreme dilatation of the large bowel, or in what is called megacolon, or where the patient has not been restored to health by the division of the kinks. I believe I am correct in saying that the pioneer himself employs it far less frequently than before, possibly because he does not see the same serious cases as he did when he was on the active staff of Guy's. In a large percentage of cases the operation for freeing the kink or kinks affords a perfectly satisfactory result and with the minimum amount of risk of life. The liberation of

the bowel from acquired adhesions calls for the greatest care both in the division and separation of the bands from the mesentery and in the covering of raw surfaces with perfect accuracy. My experience in quite a large number of abdominal operations of various sorts shows in the clearest manner possible that it is only by a recognition of the mechanical changes that take place in the gastrointestinal tract in chronic intestinal stasis and of the means by which their change can be rectified that we shall be able to deal with them effectively. I cannot illustrate this better than by referring to one of the most painful and serious results of intestinal autointoxication. A boy, aged fifteen years, who lived upon a farm, had suffered from major epileptic seizures early in life, their number varying from two to three a week. Clinical and radiographic examinations elicited a well marked first and last kink. I freed the kink by operation seven and a half months ago. The day following the operation the boy had a fit. Three days later he had another of minor degree. Four days later he presented what may be best termed an attempted fit; since then he has been absolutely free. I know of several other similar cases in which the same happy result was obtained by this procedure.

It is impossible to see the results of this operation without being astonished by the extraordinary improvements in the mental and physical condition of the patient and the rapid elimination of the chronic and severe toxemia.

An intelligent recognition and practice of these principles must inevitably confer an inestimable benefit upon a toxic humanity.

Retrorectal Tumor*

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In November, 1921, Miss P. S., aged twenty years, came to me complaining of pain at the end of the spine and because of this, inability to sit down. This condition first appeared two months ago. Her previous health had been good. There had always been a tendency to constipation which had become worse during the last two months. She stated that an enema gave better results than a physic. During these two months she lost twenty pounds in weight. A slight temperature of 99° to 100° had manifested itself during the last week. Her menses had always been regular but recently there had been a slight vaginal discharge. A moderate leucocytosis was the only abnormal blood finding.

On examination there was found bulging of the perineum—exactly the picture seen during the stage of labor when the descending head causes the perineum to bulge. The vagina admitted two fingers but was greatly encroached upon by a smooth semi-fluctuating mass the size of a fetal head. It was difficult to palpate the uterus but nothing abnormal could be found. Digital examination of the rectum revealed nothing abnormal with the rectum, but it was crowded forward against the posterior wall of the vagina by the mass. This mass lay between the posterior wall of the rectum and the coccyx and sacrum and was apparently attached to the left side of the sacrum. There was no great tenderness or any other sign of inflammation. The mass was evidently a new growth. I had never seen anything like it and found little to enlighten me in the usual textbooks on surgery. Dr. DaCosta stated that he had helped Dr. Keen remove such a growth and I became convinced that it was a rare condition until I searched the works on pathology where I found a great deal on the embryology of the caudal end of the human embryo "gone wrong" and congenital tumors of this region.

At operation an incision was made between the anus and the tip of the coccyx extending to the right. A thick walled cyst was enucleated with the finger up to the point of attachment on the left side of the sacrum. The attempt to free the growth from this point caused it to rupture. The cyst was filled with a thick sebaceous fluid containing many flakes. The cavity was packed with gauze which was gradually removed during the next three days. The recovery was without incident and two years after the operation the patient reports her health as excellent with no recurrence of the growth.

Dr. J. H. Clark furnished the following notes on the pathology of the tumor:

"The wall was composed of fibrous connective tissue of varying thickness, lined on the inside with two types of epithelium, the greater portion being squamous epithelium of varying depth; while other areas showed a high columnar mucus secreting epithelium as shown by the presence of numerous goblet cells. The wall of the cyst showed in many places thickened bloodvessels and evidences of fibroblastic proliferation. At one area just beneath the outer wall of the cyst was tissue resembling immature nervous tissue, consisting of small poorly differentiated cells and numerous large irregularly triangular cells with a large nucleus and definite nucleolus. The tissue as a whole showed evidences of a chronic inflammatory process. No tubercle bacilli were found in the material from the cyst either in direct smears or after treatment with antiformin. Diagnosis, teratoma."

According to Ewing the embryonal structures giving rise to sacrococcygeal tumors are chiefly the fovea coccygea, and the coccygeal vestiges of the neural canal, the neurenteric canal, the postanal gut, and the proctodeal membrane. The abnormalities or tumors resulting are:

Dermoids, simple or complex.—Simple dermoid cysts—as pilonidal cysts—occur frequently in the midline posteriorly. Suppurative changes may cause them to be mistaken for tuberculosis of the sacrum.

*Read before the Samaritan Hospital Medical Society, February 4, 1924.

Complex dermoids contain bones and teeth as well as hair.

Teratoid tumors.—These are solid and cystic at the lower end of the spinal column in front of the sacrum and coccyx. The spinal dura is not involved as a rule while tumors on the dorsal surface of the sacrum usually involve the dura and are attached to the bone.

Teratomata.—These tumors contain definite organs not referable to neighboring structures—such as scapula, bronchi, spleen, kidney, brain. They are usually situated posteriorly to the sacrum. Sacral teratomata are often associated with spina bifida. Malignant changes may take place in teratomata.

Fetal implantations.—These vary from the monster to the more highly developed types, as the Siamese twins.

ETIOLOGY

No definite cause can be assigned as accounting for any of these tumors. The monster or parasitic fetus is probably bigerminal in origin. Such conditions may result from the partial fusion of two originally separate embryos, derived from one ovum, or from the incomplete splitting of one original embryo. When two embryos are joined together and one goes on to complete development while only certain parts of its companion continue to grow, the result is a parasitic fetus or monster. Ewing seems to dissent from this view when he says: "The origin of the fetal implantation may in certain cases be attributed to a second embryo which in some way becomes attached to the tissues of its host, the autosite. This mode of origin is, however, probably the rarest of events, for the evidence of comparative embryology points to the process of budding as the most probable course of parasitic implantations, especially when the parasites are multiple and their development markedly imperfect." The simple tumors exhibiting tissues or organs similar to that found in the immediate neighborhood are probably monogerminal in origin, due to budding processes or impurities in specific germ layers.

According to Parin presacral tumors are less frequent than those situated on the posterior border of the sacrum and coccyx. They are distinct from the latter from the clinical point of view and their operative removal presents greater difficulties. Kiderlen in 1899 assembled from the literature 122 cases in which the tumor was located entirely or partially in the presacral region. In twenty-five of the cases, however, the growth was a dermoid cyst. Presacral tumors, when situated in the typical position, force the anus forward and the coccyx and sacrum backwards and often extend into the cavity of the large pelvis.

Parin was able to find fifteen cases of congenital tumors, located partially or entirely in front of the sacrum, and reported in the literature of a ten year period (1900-1909). He agrees with the usual view that it is impossible to distinguish between monogerminal and bigerminal origin. Six instances are cited in which mixed tumors in the sacral region became malignant and formed metastases.

Graffa collected from the literature several cases in which carcinoma arose on the base of dermoids, and reports the following case of retrorectal teratoid tumor with adenocarcinomatous degeneration:

Case.—A nullipara, thirty-four years of age, with negative family and personal history, began to feel pain in the right gluteal region. The sensation was at first slight, but gradually increased in severity and at times there was itching at the anus. Evacuation of the bowels caused no discomfort. Menses were regular. At examination there was found a tumor as large as a child's head, situated between the rectum and the sacrum. It adhered to the sacrum but showed only a loose connection with the rectum. The rectum itself was intact. A rightsided parasacral incision, beginning at the anus and mounting upward along the border of the sacrum, was made and the tumor loosened, in part bluntly and in part with scissors. The adhesions to the sacrum were relatively loose so that manual separation could be effected comfortably, but in loosening the second half of the tumor the capsule tore and a good half liter of typical, light green pure dermoid pulp, unmixed with other elements such as hair or teeth, was discharged. The patient was released four weeks later as cured, but six weeks after release there were signs of emaciation and violent pains in the cicatrix. Three months after operation the patient died of recurrent adenocarcinoma.

Honigmann reports the spontaneous expulsion of a presacral tumor per anum in a woman forty-three years of age who had suffered from tenesmus and pain, especially in evacuation and in whom a diagnosis of simple proctitis had been made.

Stoner in a paper on "The Significance of Sacrococcygeal Dermoids in Relation to Rectal Disease," says infected dermoids lying in front of the sacrum may discharge into the rectum or open finally near the anal border on the outside. All rectal fistulæ are the result of abscess formation, some of which undoubtedly originate from dermoid cysts in the sacrococcygeal region.

TREATMENT

Adhesions often render operation difficult. Leriche (cited by Kirmisson, 1899) injured the rectum and caused a fecal fistula which healed with great difficulty. In the von Bergmann case (1884) a sacral tumor was separated from the posterior wall of the rectum and the given portion of the rectal wall became gangrenous. Perforation and death resulted. In the Helferich case a tear 1.5 cm. long developed in the posterior wall of the rectum after removal of the tumor. Two sutures failed. Thermocauterization was done, but six months after the operation the fistula still contained feces.

There is always a possibility of invading the abdominal cavity or the central canal of the spinal cord. Operative complications are particularly dangerous with children where it is difficult to avoid infection from the anus. Englemann reports a case in which the peritoneum was torn for a distance of one cm. on a three days' old child who died of shock the following day. In another case the same operator found the coccyx invading the tumor and was obliged to resect the bone. During the efforts to loosen the growth the wound filled with fluid from the central canal of the cord and on the following day there were symptoms of paralysis.

Cystic teratoma can be confused with anterior spina bifida and errors of this sort are another source

of fatal consequences. Since the growth is not always a compact mass, parts are sometimes left *in situ* and these give rise to fistulæ. In Parin's case two operations were necessary. A fistula remained after the first intervention and a portion of the tumor was found behind the rectum.

The fear of peritoneal injury has sometimes caused surgeons to refrain from total extirpation. In cases reported by Heidelberg and Petrow the tumors were lost in the depths of the pelvis and total extirpation had to be abandoned, but in both cases the fistula healed eventually. The removal of the coccyx helps considerably in gaining access to the tumor. Tillman warns against resecting the sacrum. Polloson performed laparotomy and thus removed a presacral tumor whose principal mass extended into the large pelvis.

According to the Calbet statistics (1893) there were twenty-five recoveries among fifty-three operations for congenital sacral tumors, nine cases of improvement, with fistulas in five of the nine, and sixteen deaths. In Kiderlen's statistics, covering 122 cases of congenital tumors situated entirely or partly in front of the sacrum (including twenty-five dermoids cysts), there were sixty-six cases treated by operation, eleven of which were fatal. Calbet states that there were eleven recoveries and ten deaths when the operation was performed in the first half of the first year of life, and four recoveries and four deaths when the intervention fell in the second half of the first year. According to Kiderlen's statistics there were eight recoveries and seven deaths (including one death from carbolic poisoning) in fifteen cases in which the patients were operated upon the first half year. Of two patients operated upon in the second half of the first year, one died and one recovered. Of forty-two patients operated upon after the first year, there were recoveries in thirty-three of the cases, incomplete recovery with fistula in six cases, and three deaths. In the sixteen cases of teratomata assembled by Parin with partial or entire presacral location, there were twelve recoveries and three deaths. If we exclude cases antedating 1875, we find that in congenital presacral tumors removed after the first year of life, only one death is recorded. In a case reported by Hildebrand the patient was forty-three years and in one by Salitschew he was fifty-four years old.

In general, prognosis depends on the age of the patient and the relation of the tumor to its surroundings.

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The Importance of Appendoröntgenography in Its Relation to Surgical Intervention

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Of all the means employed for the differentiation of abdominal lesions no aid leads nearer to a more positive conclusion than properly conducted röntgenography, particularly as to pathological conditions or the indications for surgical intervention.

The chronic irritative appendix, usually termed chronic appendix, presents various pictures upon the röntgenogram, but among these great stress should be laid upon the so formed sluggish appendix which has proved to be of far more importance than is usually considered. In the röntgenological examination of the appendix careful search of the urinary tract is necessary, particularly of the right side, in order to exclude calculi; of course affections of the urinary tract need not exclude those of the digestive organs.

In carefully examining the alimentary tract the duodenum must be observed for either ulcers or other irregularities. One should be careful not to conclude that adhesions exist until the parts have been taken in various positions, as grave errors may be made through hasty conclusions made from a few films. Examinations at various angles and positions are needed to decide with any degree of probability upon the presence of adhesions and to differentiate them from spastic constrictions, a condition occurring not infrequently.

The opaque meal used to examine the intestinal tract must be observed in its course by means of the röntgenoscope, during which progress the appendix must be studied in its various phases.

The normal appendix is represented upon the röntgenogram by a fine linear or segmented shadow projecting from the lower and inner portion of the cecum and varying considerably in its length, thickness and direction. Its observation requires practice and close scrutiny and may be best studied twenty-four hours after the opaque meal has been taken. Although at times the appendix can be seen before that time, in some instances a longer period is required.

The complete examination of the appendix usually takes from three to six days or even longer, dependent upon peristalsis; but observation of its con-

tents should continue until the lower cecum and the appendix are free from the opaque mass, as upon such observations the diagnosis may depend.

The appendix in the retrocecal position is frequently held obscure except when taken in a right lateral oblique position; of course it becomes visible if the opaque mass is retained after the opacity has left the cecum.

When the opaque mass of the appendix disappears with that of the lower cecum or even a few hours later, the appendix may be considered normal. Its retention for one or two days may be considered of little moment but if the opacity remains in the appendix for a longer period one must watch for abnormal conditions and observe position, shape, adhesions or kinks; also peristalsis, stasis, and other conditions.

Retention of the opaque mass for more than three days is evidence of poor drainage and suggests what may be termed a sluggish appendix, the time of retention which might be termed the time of opacity, indicating the degree.

It might be of interest to give brief outlines of several points of importance connected with my observations in studying röntgenographically a number of abdominal affections. Most of these patients suffered from pain varying in location in the abdomen and whenever at the seat of pain no other cause could be demonstrated by any form of examination the appendix was watched as to the time the opaque meal was retained; others had been constipated and taken laxatives for years. Among them were a number upon whom various operations had been performed, while other patients examined were supposed to have biliary, renal, ureteral ailments or diseases of the digestive organs.

Some patients suffered from recurring painful attacks, though not always in the region of the appendix, which disappeared and never returned after the removal of a sluggish appendix.

It is important to note that the presence of a chronic irritative appendix must be strongly suspected when the appendix contains the opaque mass after thorough catharsis; or the visual absence of the appendix, the proper technic having been used, without a history of a previous appendectomy, indicates that the mass did not enter the appendix because of obliterative processes. These forms of appendices must always be considered pathological.

From this experience it seems reasonable to say that every appendix of more than five days' opacity after a laxative test proves a sluggish appendix and suggests removal and the findings in these operations always corroborated the diagnosis.

Chronic irritative appendix must be röntgenographically differentiated from: 1, Renal and ureteral calculi, right sided hydronephrosis; 2, hardened concretions; 3, enteroliths; 4, calcified glands; 5, tuberculosis of cecum; 6, carcinoma of cecum; 7, some form of tuberculous mesenteric glands; 8, duodenal ulcer; 9, gallstones; 10, adhesions about the cecum and upper portion of ascending colon from prior inflammation.

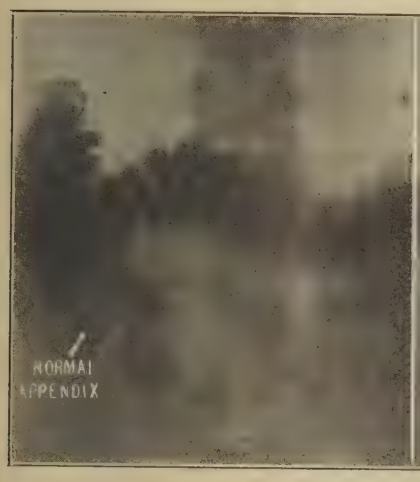

FIG. 1.—Lower cecum and appendix empty in twenty-four hours.

FIG. 2.—Showing hardened concretions in the appendix.

FIG. 3.—Lower cecum and appendix, 120 hours after barium.

CONCLUSIONS

A chronic appendix may be shown by:

1. Visual absence of appendix.
2. Concretions.
3. Local area of tenderness in the course of the appendix shown on röntgenoscopic examination, providing other irritative centres in that region have been ruled out.
4. Retention of the barium meal in the lumen of the appendix for several days after the lower cecum is empty despite a laxative.
5. Irregularities in the lumen, particularly a bulbous tip.
6. Adhesions about the cecum and the terminal ileum, indicating inflammatory process.

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Hematocele Following Splenectomy Demonstrated by Pneumocolon Röntgen Examination

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The following case history warrants a report, in view of the unusual character of the pathological condition and of the method employed in making the diagnosis:

Case.—J. M., aged four, referred by Dr. E. A. Rosenberg, was playing in the street, December 22, 1920, when he was hit by an automobile and sustained a severe blow over the upper abdomen. He went into shock immediately with signs of internal hemorrhage and peritoneal irritation. He was taken to a large city hospital and operated upon immediately. The laparotomy revealed a ruptured spleen, which was removed in the usual manner. He remained in the hospital for one month making a smooth uneventful recovery.

The night that he left the hospital, he was taken with severe pains in the upper abdomen and became prostrated, extremely pale with a rapid pulse, and his condition was almost as severe as immediately after the accident. It was at this time that the patient came under the observation of the referring physician.

Physical examination was not conclusive in establishing the source of trouble and he was sent back to the hospital for observation, possibly operation. He remained in the hospital for two days, it was decided not to operate, and he left the hospital slightly improved.

Fig. 1.—Air in colon forms a contrasting background which completely outlines the tumor.

For one and a half months his condition progressed unfavorably. The abdomen became more swollen and gradually a large tumor mass became palpable filling the abdomen and pelvis. Different methods of physical examination failed to determine what the character of the condition might be. The outline of the tumor mass could not be determined, owing to the extreme tension throughout the entire abdomen. He was referred at this time for x ray examination, which showed a diffuse homogeneous shadow throughout the entire abdomen and pelvis. X ray examination was then repeated after inflation of the colon, after the method described by the author (1), with most satisfactory results.

A discrete spheroidal tumor mass was found to occupy the upper left two thirds of the abdomen, which when studied under the fluoroscope and by stereoscopic röntgenograms appeared to have a distinct attachment to the splenic region, and in view of the history a diagnosis was submitted of a probable hematocele arising from the slowly bleeding stump of the splenic artery. The air in the colon formed a contrasting background which permitted a clear visualization of the entire margin of the tumor. (Fig. 1.)

The patient was now referred back to the hospital for operation and the operative findings included the removal of a hematocele arising from the stumps of the splenic vessels. The patient made an uneventful recovery after removal of this large tumor, two years ago, and up to the present time feels entirely well, without any abdominal symptoms whatsoever.

COMMENTS

Hematoceles arising from the splenic artery are extremely rare. A thorough search through current and recent medical literature fails to find a record of a similar condition.

X ray after the inflation of the colon has a limited but an extremely useful field of application. It gives uniformly satisfactory results, when the tumors are large, but is not as useful as pneumoperitoneum in detecting small tumors, adhesions, and other conditions. On the other hand, its simplicity, freedom from risk and discomfort and the avoidance of any operating room details, makes it a procedure easily applied and extremely advantageous in a great number of instances.

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9 West Sixty-eighth Street.

Symposium on Neurology

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, OCTOBER 15, 1924

Nervous and Mental Phenomena Following Chronic Intoxication with Valerian

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Valerian is one of the most active antispasmodic remedies. Every one of its preparations has similar physiological reactions although they differ in degree and intensity. The characteristics of the reactions consist at first of stimulation of the brain and medulla. This phase, which is brief, is promptly followed by a more or less prolonged period of fatigue, apathy, and a paretic state. The modifications in the function of the motor apparatus also in the reflectivity are apparently of central origin and not of peripheral, as the first impression may be. The sympathetic nervous system is apparently also involved, since the vasomotricity is equally influenced; the vasoconstrictors are manifestly affected, as the arterial tension is elevated. On the other hand, when stronger doses of valerian are taken, hypotension is observed.

Not only the circulatory but also the respiratory apparatus is influenced by valerian or by its derivatives. The number of respiratory movements is decidedly augmented and again probably through a cerebromedullary mechanism.

Physiological as well as experimental investigations show conclusively that the chief effect of valerian lies in the antagonism to convulsive or excitant states. L. Branton, for example, observed that valerian arrested the spasmodic action of small doses of strychnine. All excited states of the nervous system being manifested in cerebromedullary phenomena in the domain of the circulatory, respiratory or digestive apparatus become diminished, greatly modified or removed by administration of valerian. In Grisar's experiments there was a diminution of reflexes, somnolence, a paretic state and general depression of the nervous system (1). Sikorska's (2) experiments show that small doses are an excitant of the motor cortex; large doses produce depression, and from all doses there is a diminished resistance to fatigue.

In a general manner valerian is to be considered as an excitant terminating in depression or perversion of motor functions. Féré (3) arrived at the same conclusion. Finally in more recent investigations H. Boruttan (4) demonstrated that under the influence of valerian dogs become quiet and react little to external stimuli; they remain in a sitting position with open eyes, and their reflex irritability is diminished. Furthermore when larger amounts of the drug are given by injecting it into the lymphatic channels, prolonged paralysis of the central nervous system is observed.

In the literature at my disposal, with one single exception, no mention is made of symptoms referable to the function of the cerebellum under the influence of valerian. E. Durand in his book on valerian published in 1921 is the only author who in his experiments with valerian on mice and guineapigs observed manifestations, not only of disturbed cerebrum and medulla, but also of the cerebellum, namely, rotation around the axis and loss of equilibrium.

I also failed to find in the literature records concerning the prolonged or chronic use of valerian. The majority of clinical and experimental investigations on the subject are concerned exclusively with immediate effects of the drug, but not with remote reactions after the patient has been taking it for a continuous period of time.

In view of the fact that valerian is useful as a sedative medication in hysterical and other functional disorders of the nervous system, also as a rapidly active stimulant in certain low states which occur in acute febrile diseases, it appears interesting and instructive to put on record the history of a case which presents, in addition to the well known characteristics, the two special features not mentioned in the literature, namely, the consequence of a chronic intoxication with valerian and the cerebellar manifestations.

The preparation used in this case was tincture of valerian. At this juncture it may not be superfluous to mention that the cerebromedullocerebellar as well as the mental phenomena, in the opinion of the sceptical observer, may have been due to the alcoholic content, with which tinctures are usually prepared. To refute this possibility it is well to bear in mind the recent experimental work of Macht and Ting (5). They have shown that the effect of

valerian is not due to inhalation of alcohol contained in the tincture of valerian, because controls made with the same quantities of ethyl alcohol alone failed to produce the symptoms caused by the drug.

Case.—Mrs. A. H., aged thirty-five, following a difficult and protracted labor commenced to use tincture of valerian for insomnia. At first she was given half a dram. Gradually, without asking the advice of her physician, she increased each individual dose. Having succeeded in obtaining the drug without prescriptions, she continued using it daily.

At the time she came under my observation I was informed that the patient had been using the drug to the exclusion of any other medication during a period of eighteen months. Her daily ration was one ounce which was taken in teaspoonful doses several times a day. Prior to the date when she commenced the use of the drug she was in excellent condition. The somatic recovery from the difficult labor was also complete. There was no history suggesting lues. She had three healthy children. The Wassermann test of her blood, as well as of her husband's, taken twice, was negative. The family history was also normal. The patient prior to or during her present illness never used alcoholic beverages. Her mental condition was formerly good. A complete blood examination showed a somewhat low hemoglobin content (75); red blood corpuscles 4,000,000; the white corpuscles 10,000. No abnormalities were found in the blood cells. The slight anemia present was not sufficiently pronounced to cause the symptoms referable to the central nervous system. Uranalysis showed: specific gravity 1030, traces of albumin, no sugar, a few hyaline casts and cylindroids.

The patient's condition was as follows: There was a marked mental hebetude; an inability to carry out correctly orders given: at first she tried to comprehend the questions asked, then she stared, hesitated, attempted to do what she was told, interrupted her attempts, commenced it over again and finally acted in a reverse manner. For example, when told to stand up, she extended her legs; when told to extend the arms, she flexed them. When told to protrude her tongue, she closed her mouth tightly. When told to write, she did not know how to go about it. When a penholder was placed in her hand, she attempted to write with the opposite end of it. Objects shown her she misinterpreted, and when reminded of the correct names, she hesitated before repeating them and soon forgot them. When left to herself, she walked in the wrong direction even to the point of danger; she was likely to walk towards an empty space. She would attempt to handle burning objects if not prevented from doing so. She often talked to herself in a most unintelligible manner. She had to be fed. She was extremely unclean, handled the excretions, urinated wherever she happened to be. She showed no delusions, but a hallucinatory state was present, as frequently she was found talking in an animated manner with her eyes directed towards the ceiling and moving her hands in the same direction. At times she became delirious, at others stuporous, or mute; she was totally oblivious to surroundings.

Somatic phenomena. — The gait was decidedly ataxic, such as is seen in cerebellar lesions. There was a tendency to fall backwards: the trunk did not follow the legs (asynergia) and at the same time a zigzag movement of the body was evident: she walked from side to side. She dragged her legs, scraped the floor in walking. It was a great effort for her to go up the stairs: she was obliged to hold on to the bannister with one hand and with the other she held on firmly to another person; then she tried to raise her foot, but the toes invariably struck the woodwork before the foot was placed on the next step. Station with open and closed eyes was impossible, she immediately fell backwards.

The tonicity of the lower limbs was decidedly lowered. Their flaccidity was marked. Although voluntary movements were possible, nevertheless they were extremely slow. Passive movements were carried out with great facility in view of the hypotonia. The muscular power and tonicity in the upper extremities were identical with those of the lower ones. The patellar tendon reflexes were markedly diminished. The same was observed with the tendon Achilles reflex. As to the plantar reflex it was variable: sometimes there was no response at all to stimulation of the sole, sometimes there was a mild extension. The same results were obtained with other methods (Oppenheim, Chadwick and Gordon). There was some ataxia in the upper extremities observed with both pointing and the finger to nose tests. In the first test the patient's finger never reached the object placed before her, but invariably fell externally and at a considerable distance from it, more with the right than with the left hand. In the finger to nose test the index reached the point of destination only after several excursions in all directions. The tendon reflexes of the upper extremities were obtainable but with great difficulty; the amplitude of the arms on testing was notably small. Adiadochocinesia was distinct in the right hand; in the rapid pronation and supination movements this hand was manifestly lagging and did not keep pace with the left hand. General sensibility to all forms was diminished. Tests for special sensations could not satisfactorily be carried out in view of the patient's disturbed mentality. The eyegrounds with the exception of a slight congestion of the retinal bloodvessels were normal. The ocular muscles functionated normally, but there was, however, a lateral nystagmus when the eyes turned to the right. The speech did not show the disturbances which are usually observed in organic lesions of the brain. There was no motor aphasia or anarthria, but the words were uttered very slowly and at times they could not be understood fully, the labial letters especially not being clear. As to sensory aphasia, it could not be determined because of the incoherent mental state.

The course of subsequent events in the present case was as follows: By gradually decreasing the quantity of valerian, by prolonged rest in bed, appropriate dietetic and hygienic measures, finally by complete withdrawal of the drug, considerable improvement was obtained. At the time of writing these notes the cerebral and cerebellar manifestations have totally disappeared. However there is

still present a state of asthenia which has not yet been removed.

To sum up the striking manifestations of the present case, we find a combination of mental and nervous phenomena such as are frequently observed in classical psychoses and in organic diseases of the nervous system. As to the former, there are present many essential elements of a confusional psychosis, which is frequently observed in postinfectious processes of any origin or in toxic states from acute or chronic absorption of organic or inorganic chemical elements. The absorbing interest in this case lies in the cerebellar manifestations which are ordinarily encountered in tumors, vascular lesions or lues of the cerebellum.

The morbidity of this organ was so striking at first glance that no other possibility suggested itself. Further examination and observation pointed more and more strongly that a toxic state could simulate any gross lesion of the central nervous system. It is well known that syphilis could at any stage present symptoms of cerebral, medullary, cerebellar and peripheral character. Recently a young married woman, wife of a physician, presented typical phenomena of a cerebellar nature all confined to one side. All the characteristic symptoms were present with the exception of papillary edema. The patient was treated with antiluetic remedies and made a complete recovery.

In cases of acute or chronic morphine intoxication, changes in the motor and sensory apparatus, also in reflexes, are commonly observed. In a recent case of heroine intoxication there were present symptoms referable to cortical irritation with epileptiform convulsions as a consequence (6).

Valerian is an antispasmodic like morphine and heroine and like them may be useful in many instances of nervous irritability. On the other hand, like them, it may become damaging directly to the central nervous system when a state of valerian toxicity develops. Experimental data related above go parallel with clinical observation.

The pernicious effect produced by a prolonged ingestion of valerianate preparations on the economy in general and on the central nervous system in particular, finally the occurrence of cerebellar phenomena which with one exception have never been mentioned by experimental investigators—all these reasons warranted the writer placing this case on record.

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Diet in the Causation of Epilepsy

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Before bringing to the attention of the reader some observations that show a causative relation between diet and genuine epilepsy, I shall give a very brief résumé of important findings in an investigation of this disease that demonstrate it to be a diseased condition of the vasomotor nerve fibres, indeed a true neuritis. This research was published (1) and the facts contained therein of the diseased condition of the sympathetic fibres (vasoconstrictors), manifested by the abnormal reactions of these fibres to measured stimuli, and by the presence of chronic vasoconstriction spots (white spots in the skin of epileptics, due to diseased overactivity of the vasoconstriction fibres involved in the spots) have not been questioned. Nor can these facts successfully be disputed, for they are objective signs, readily demonstrable on the epileptic patient. These objective signs are so characteristic that an accurate diagnosis of the disease has been made frequently by noting their presence. It behooves the psychiatry fraternity to become acquainted with the phenomena, as the following case in point illustrates.

Fannie, a girl of sixteen, was having queer attacks: she would suddenly run to the sink for a drink, and would sometimes fall before getting there. She was taken to the Massachusetts General Hospital, where no diagnosis was made; she was under treatment at the Boston City Hospital for a while, the neurologist there stating to her older sister that he "suspected" epilepsy. Fannie was then taken to a psychiatrist in Boston, who is regarded as an authority in Court practice; he examined the girl and informed her sister that Fannie was normal. Three weeks after this examination, Fannie was brought to me, and I, finding present in her the objective signs mentioned above, made a positive diagnosis of epilepsy, and so informed the sister. This diagnosis was confirmed by the after history of the case—the outbreak of many *grand mal* attacks in the course of the year following.

Other important findings made in this research are a hypertonia of the sympathetic fibres in the incipient stage of the disease (associated with the symptoms fainting spells, sudden pallors, sudden weaknesses, attacks of dizziness, sudden lapses of consciousness, etc.), a hypertonia that the drug *oenanthe crocata* was found to quell,—thus determining this drug to be a sympathetic paralyzant. The hypertonia and the symptoms mentioned gradually disappear under oenanthe medication.

The research work on incipient epilepsy was reported at the Boston meeting (1921) of the American Medical Association (2) and published.

An important finding made in chronic *grand mal*

with frequent convulsions is that of a calcium deficiency—demonstrated by x ray investigation. This finding clearly indicates the need of calcium medication (or feeding) in epilepsy, and explains the benefit often witnessed on fulfilling this indication.

Having touched briefly upon a research that has gotten at facts that disclose the nature of the disease —in the beginning a hypertonia of vasomotor fibres that unchecked goes on to a condition in which there is a manifest calcium deficiency, and a manifest cortical hyperirritability, I shall proceed to relate some observations relevant to the title of this article.

ETIOLOGY OF EPILEPSY

In the etiology of epilepsy, there is constantly found in the history of most cases the infectious diseases of childhood, especially scarlet fever, whooping cough, and measles. Fright is important in the etiology: a carefully investigated case of epilepsy arising from a severe fright in a healthy child with a good heredity and no previous illness was reported by me (3). Grief and anxiety are causative of the disease in adults. Direct heredity is rarely met with and I am not prepared to admit that the diseased condition of the vasomotor fibres constituting epilepsy is congenital except in very rare cases.

This diseased condition of the vasomotor fibres (it is a real neuritis of these fibres) may well be caused by the sepsis accompanying the infectious diseases, and it may be caused by a disturbance of the nutrition of those fibres through lack of essential nutritive elements. Comparatively recent research by various workers in the field has shown that the vitamines are essential for normal nutrition. The writer had the good fortune of being privileged to observe the results of experimental work on diet in animal feeding conducted in the Forsyth Research Laboratory, Boston, by Dr. Percy Howe, assistant professor of dental research, Harvard University. In the monkey, deprivation solely of normal vitamine contents of the food has produced epilepsy; and for more than a year I had under observation a monkey with idiopathic epilepsy, which at its inception was associated with tetany, the condition being attributed to such vitamine deprivation.

Until I observed this case, the etiology of certain cases of epilepsy met with in practice appeared to me quite obscure. For an example, I will briefly relate one of them. Nestor, a boy eight years old, had had *grand* and *petit mal* since the age of six months. Heredity was good and birth was normal. No disease present previous to outbreak of convulsions at six months. Cut his first teeth between six and seven months. He was weaned at three months and fed on a proprietary food, and no orange juice was given until six months of age. At six months there was an outburst of convulsions, which continued to recur for several years. In the case just outlined, we can fairly attribute the epilepsy to the only feature in which the child's bringing up differed from that of the other children in the family—his early weaning and artificial feeding, so that a defective diet can be claimed as the cause of the epilepsy. Inasmuch as the first teeth came between six and seven months, it would seem that it was not a lack of assimilable calcium content that caused the epilepsy. The observation of the monkey with epilepsy caused by a vitamine deprivation (the calcium content of the diet was normal) renders me inclined to attribute this boy's epilepsy to vitamine deficiency—which he would have escaped had he been kept on his natural diet, his mother's milk.

I need but allude to the nervous disease beriberi —caused by lack of vitamine B, to prove the importance of the vitamines in nerve nutrition. I have said that epilepsy is a vasomotor neuritis. The facts disclosed in the investigation reported (1) including abnormal vasomotor reactions, indicating hypertonia, hypotonia, and absence of the vasomotor reflexes in the bloodvessels of the skin, together with the presence of chronic white spots on the skin of epileptics (caused by a hypertonia of the vasoconstrictors involved in the spots) are best explained by the pathological conditions of the vasomotor fibres discovered by Echeverria, and carefully investigated by him microscopically, and fully described in his work (4).

With this knowledge that epilepsy is a disease of the vasomotor system, at first probably functional, and manifested by a hypertonia, quellable by oenanthe, and progressing, untreated, into a neuritis with pathological changes, and associated with a calcium deficiency of the body tissues,—the indications for correct treatment are certainly clear. The nourishment of the diseased nerve fibres and cells (the cortex cells are affected in *grand mal*) is clearly called for. And this indication, in view of what has been mentioned in relation to vitamine deficiency and the production of nervous diseases, calls for a careful provision of vitamines in the diet of the epileptic patient.

CONCLUSIONS

The results attained from the careful treatment of epilepsy in accordance with the findings briefly sketched in this article, permit the following general conclusion: Genuine epilepsy is a curable disease. In the incipient stage, and even after the appearance of convulsions, the cure is easy; in the chronic case the cure is difficult. If in the progress of the disease nerve fibres essential to normal brain function have been destroyed—the case is incurable. But who will determine that in a given case such destruction of fibres is present, especially in a case without marked mental impairment? There is hope therefore in chronic cases, and persistent treatment to restore normality to the tissues and organs of the body by appropriate diet and medicine is followed with results that appear miraculous when compared with the results of the treatment generally in vogue, —i. e., the mere suppression by powerful drugs of the convulsions, with no attempt to understand the basic pathogeny of the disease or to meet the indications this pathogeny points out for the restoration of the diseased vasomotor system to neural health by suitable nutrition and medication.

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Allergy as a Factor in the Etiology of Idiopathic Epilepsy*

Preliminary Contribution

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After centuries of study the explanation of the convulsive phenomena making up the symptom complex commonly designated as idiopathic epilepsy remains unsatisfactory and uncertain.

None of the current theories such as intestinal toxemia, psychogenesis, endocrine anomaly and cerebral lesion is sufficiently fundamental and comprehensive to explain adequately or to point the way to rational and effective treatment. Thus idiopathic epilepsy has largely come to be considered but a manifestation of many diverse causes rather than a diathesis or dyscrasia as was formerly the case. The tendency toward considering all epilepsies as symptomatic is not without its dangers, among which is that of inhibiting investigation along other lines, for it is apparent to many that beside the organic defect some other factor must be present in order to bring about the convulsive explosion.

It has seemed to the writers that a phenomenon so constant in its character must have a fairly constant immediate etiological basis, however diversified the antecedent factors may have been. W. T. Shanahan, medical superintendent of the Craig Colony, in his last annual report (1) states "To those familiar with the epilepsies there can be but little doubt of the fact that a defective nervous system acted upon by a chemical substance of some unknown makeup and origin is the explanation of the exciting etiological factor. These defects are multiple in nature and so in like manner, the offending chemical substance may be of varying formulas in different cases. We find apparently the same defects in non-epileptics."

Within the last few years the tremendous value of the observations of Richet, Arthus and Theobold Smith upon the phenomena of anaphylaxis have come to be realized and as a result of numerous investigations by many observers baffling problems of etiology, diagnosis and treatment in hitherto obscure conditions have been wholly or partially cleared up; most notably in hay fever and urticaria, in a large proportion of cases of asthma and eczema, and in a number of other conditions such as angioneurotic edema, acute abdominal pains, and bladder irritability. In these conditions allergy and hypersensitiveness have been found to be a frequent and important factor. It is not surprising therefore that when so many heretofore obscure phenomena were so readily explained and when it was observed both in animal experimentation and in clinical observation that convulsions are very often a manifestation of a definite anaphylactic shock that epilepsy should be included among the possible conditions in which allergy is an important factor.

It is not uncommon for the anamnesis of epileptic patients to show that the onset of convulsions followed and was attributed to the ingestion of some particular food, such as eggs, pork, cabbage, bananas, which had before not been included in the diet or if so had before not agreed with the patient. Physicians have been prone to discount this evidence, conceding the possible influence of gastrointestinal irritation but ignoring specificity. Convulsions in infancy, sometimes persisting in later life, often date from the introduction of foods other than breastmilk into the dietry. Thus E. G. and D. G., sisters, aged eleven and eight, showed convulsions at the ages of eight months and ten months, when first changed from breastmilk to a modification of cow's milk. The convulsive attacks have persisted until recently. A. M., a girl aged seven, showed convulsions at the age of four months, when she was changed from breastmilk to a carbohydrate preparation called groats, and which persisted at intervals until the age of seven months when she was put upon modified milk. H. B., a boy aged eleven years, showed convulsions at the age of three months, when he was given a carbohydrate gruel prepared from cracker crumbs. The convulsions persisted until arrested by treatment three months ago.

Socalled fits in animals usually occur after the eating of unaccustomed foods, especially in cats whose idiosyncrasy to pork is well known. Spratling, writing in 1904 (2), states: "Finally, individual susceptibility to certain foods, harmless in most persons, but poisonous in others, should not be overlooked; such foods usually consist of shellfish, and certain fruits, including peaches and strawberries."

Later in the same work (page 134) he mentions the case of a boy who had a convulsion at the age of one year, (probably when put on cow's milk.—Author's note) with no recurrence until the age of eleven, when he was vaccinated, and his body became covered with a general scaly eruption with the immediate appearance of convulsions which became permanent in character. This the writers surmise was an instance of hypersensitiveness to bovine products, a condition which they believe to be not unique. Ward (3) reports convulsions in a girl sensitive to cow's milk, cheese, casein, beef and veal, whose attacks ceased when all bovine products were excluded from her diet. M. C., aged nine years, a patient of one of the writers, had ber first convulsion at two years after eating a banana, and while ordinarily her attacks are controlled by treatment, indulgence in this fruit, and in chocolate, tomatoes and potatoes will bring on a convulsion. She presents a definite skin reaction to tests with each of these foods.

Spratling mentions (*idem*) a young man, previously free from convulsions who was severely stung by bees about the face and whose convulsions ap-

*Read before the College of Physicians of Pittsburgh, January 25, 1923.

peared regularly every two weeks thereafter. J. M., a boy of sixteen, a patient of one of the writers some years ago, would invariably have a convulsion after the smoking of a cigarette, though free from them when not using tobacco. G. E. N., a normal child of three and one half years, who had in early childhood shown hypersensitiveness to egg by the appearance of urticaria, and from whose diet egg was then eliminated, received a portion of an egg through the carelessness of a servant and responded with the usual symptoms plus a severe prolonged convulsion and is now, seven years later, a feeble-minded mute. S. C., a boy aged six years, received several large doses of antitoxin for suspected diphtheria, which proved to be a simple angina, in whom there developed a convulsion and he continued to manifest major convulsions with frequent *petit mal* attacks. In H. S., a boy of ten years, there developed convulsions after vaccination. Instances might be multiplied both from the literature and from personal case histories in which there is apparently a direct relationship between the introduction of a foreign substance into the economy and the onset of convulsive attacks.

Novy and De Kruif (4) make some significant observations relative to anaphylaxis which, the writers believe, are pertinent to the present discussion. They say "It is important to realize from the medical viewpoint that inducing substances may develop within the normal animal through some unrecognized cause which may lie in a peculiarity of diet, or in exposure, or in obscure infections, etc. As a result, the blood of such an animal will be abnormally toxic because of the presence of anaphylatoxin or taraxin. This condition has actually been observed in normal untreated rabbits. A similar condition is without doubt of frequent occurrence in man and while the amount of poison thus produced may not be sufficient to cause an acute anaphylactic or teraxic shock, it may lead to a subacute or chronic form of intoxication. The sudden formation of much anaphylatoxin or taraxin may bring on the explosive effects seen in eclampsia, and perhaps in surgical shock, not to mention other attacks with rapid onset. The gradual production and presence of such poison may result in the obscure effects noted in connection with some of the socalled autointoxications, and it may lead to anemia, cachexia, etc. Lastly and not the least, it is also to be remembered that a considerable part of the toxic effects in infectious diseases is in all probability due to the formation of anaphylatoxin or taraxin. In other words, infection leads to taraxy. The great and far reaching importance attaching to this problem will be evident the moment it is realized that the circulating blood, through a variety of agents, may be changed from a beneficial and harmless to an injurious and poisonous state. The alien substance is merely the trigger which, so to speak, ignites or explodes the charge contained within the bloodvessels."

The preceding observations are sufficient, the writers believe, to indicate the basis upon which they postulate an intimate connection between the phenomena of anaphylaxis and allergy and the phenomena of idiopathic epilepsy. Proof requires further investigation in many fields. Why an anaphylactic shock should eventuate in convulsions instead of the more usual phenomena opens up another fertile field for speculation. Besredka (5) assumes that the shock in anaphylaxis is due to the direct toxic action of protein split products upon the cells of the central nervous system. "The experiments of different authors, however, have definitely shown that the central nervous system is not primarily, but only secondarily involved in the anaphylactic symptom complex." (*Idem*) Perhaps a predisposition to convulsions exists because of inherent organic inferiority (inherited or acquired) of the cerebral cortex. Perhaps certain protein split products possess a specificity for certain cells, in which case convulsive crises may occur rather than bronchial, gastric or other phenomena. The resulting nerve cell pathology or nerve cell irritability may be the foundation for subsequent convulsive crises either with or without an anaphylactic basis.

The case records of the writers contain notes of so many cases in which convulsive attacks, aphasia, hemiplegia, amentia and other indications of organic brain injury have followed the use of diphtheria antitoxin, vaccination and the ingestion of certain foods that they cannot but feel that the phenomena of anaphylaxis and allergy are factors of great etiological significance. Except by analysis of the anamnesis, and occasionally where sensitiveness to the offending substance has persisted, there is at present no sure way of isolating the exciting cause. Skin tests may show single or multiple sensitiveness or may show sensitiveness to none of the usual allergins. This because sensitiveness may have been only temporarily present in the subject, he may have become desensitized or because the existing anaphylactic tendency is toward some unusual substance not included in routine tests or which resides in some complex state of body chemistry. The labors of many workers in many fields will be necessary to solve the problems involved.

Nonspecific as well as anaphylactic reactions are elicited most frequently by colloidal substances, either injected therapeutically or originating in the tissues as a result of some inflammation (turpentine injection, burn, trauma, etc.). Of the various colloids we find the proteins and their derivatives most commonly used.

The native proteins consist of exceedingly complex molecules which in turn are built up of combinations of aminoacids. Chemically, the proteins are relatively stable and inert and are amphoteric (combining with both the hydrogen and hydroxylion). They can be hydrolyzed by acids, alkalies and enzymes yielding a series of degradation products commonly referred to as protein split products. These latter vary in character, amount and decomposition with the protein undergoing lysis and the method used in bringing disintegration.

The ultimate molecular units from which the proteins are constructed, are the aminoacids. In general, the lower split products of the proteins, including the aminoacids are relatively nontoxic and bring about little or no reaction on the part of the patient when injected. The compounds containing the various ring groupings of the carbon atom as

well as the diamino group, seem to be exceptions. The toxicity of histamine is well known, especially its ability to procure convulsions. More recently the presence of histamine and other toxic amins have been demonstrated in the bowel of cases of intestinal obstruction and the toxic symptoms of this condition have been attributed to these poisonous protein decomposition products. Histamine, like other amines, may arise through putrefactive changes in protein containing materials and is therefore among the more potent of the bases to which bacteria may give rise. Microorganisms capable of producing amines have been isolated.

A number of procedures, essentially nonspecific in character, have been tried in the treatment of epilepsy, beginning with the use of serum injections by Ceni (6) in 1903, brain extract by Lion (7) in 1911, cerebrospinal fluid by Gordon in 1914 and immune rabbit serum by Held (8). Turner treated twenty-three cases with colloidal platinum injections and noted a diminution in the number and intensity of the attacks.

Dollken (9) used a combined milk and luminal therapy, adding to the milk injections a small quantity of vaccine of nonvirulent organisms and gave injections twice weekly. Twelve cases were free from attacks for a period of eighteen months and sixty for one year. In thirteen cases there was no complete cure but a definite improvement was noted.

Edgeworth (10) in a series of twenty-three cases, injected a five per cent. solution of peptone at weekly intervals, giving five, ten, fifteen and twelve minims. Toxic symptoms were observed in four cases. In forty per cent. of the cases so treated, the attacks ceased.

Geyelin (11) has recently reported that fasting may at times be followed by the cure of epilepsy. Whether the therapeutic effect is dependent on the acidosis involved in this method, and thereby related to other nonspecific shock effects, has not been established.

In the writers' experience with this method convulsions have returned with their usual intensity soon after the patient returned to a normal diet and to full activity.

In the present state of our knowledge radical measures based upon the assumption mentioned above must be avoided, for the state of the epileptic is pitiable enough without incurring the danger of rendering it worse by injudicious therapeutic activity. If the offending substance or substances are still active they may be apprehended by the method suggested by Duke (12) in determining hypersensitiveness in other classes of cases. His sources of information are: 1, family history; 2, personal history; 3, examination; 4, observation by the patient, and 5, specific tests (cutaneous, ophthalmic, nasal, subcutaneous, clinical, etc.).

If an offending protein or other substance is found it should be removed from the diet or environment of the individual. In addition the immunity threshold should be raised by every means within our power. This may be done by following the measures, hygienic, medical and educational, detailed by one of the writers in a previous contribution. (13).

The authors' references will appear in his reprints.

The Use of Luminal in the Treatment of the Excited Phases of Mental Illness

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In view of the excellent temporary results reported from the use of luminal in epilepsy, an attempt was made to determine whether this drug would quiet patients in excited periods of mental illness, and, if so, what classes of such patients were most benefited. A group of thirteen colored women patients were chosen to receive treatment. Of these, seven suffered from periodical excitements and six were in a state of continuous excitement. As to diagnosis, eight were dementia precox cases, two manic depressive, two general paresis and one a mixed psychosis showing preponderantly precox features, so that it will, for convenience, be put in that group. In age, they ranged from thirty-five to seventy-four, five being between thirty-five and forty-five, five between forty-five and fifty-five, one between fifty-five and sixty-five, two between sixty-five and seventy-five.

In the cases of periodical excitement, charts were kept for some time prior to the administration of the drug, so that an accurate idea could be gained of the usual course and duration of the disturbance. This having been accomplished, the luminal was given at the first indication of upset. All the periodical excitements under consideration went into their disturbed attacks rather suddenly,—either over night or in the course of one to three days. The nurse in charge of these patients had watched them carefully for a long period, in some cases for as much as two years, and was well acquainted with the behavior changes which heralded a storm. The drug was given in moderate doses at first, three grains a day, so that any untoward effects could be observed at once. If necessary the amount was raised to four and a half grains, or one tablet three times a day. This amount was never exceeded.

The dose of the drug was regulated much the same at first in the continuous excitements. Its withdrawal was usually gradual, but in one or two instances the subject was started with four and a half grains and after a time it was abruptly withdrawn. No difference was noted in the effect.

Two of the patients showed a definite marked increase in the severity of their symptoms beginning about twenty-four hours after the first dose of luminal and lasting until it was discontinued. One of these was a woman in her thirties suffering from

general paresis. She was a strong muscular light colored woman who, for the entire six months of her hospital life, had scolded, picked fights with other patients and destroyed furniture and clothing. Although never quiet previous to the luminal therapy, she became noisier, more irritable and more savage in her attacks on other patients. The drug was given intermittently, in varying doses, for a period of three weeks, but at no time could any beneficial results be observed. The other patient whose excitement showed an increase was a gaunt dark woman of fifty-two, who had been in the hospital about two years and a half. She was a typical case of dementia precox, full of delusions, talking constantly, destructive, untidy. She had been in the hospital two years about ten years before the present admission. Luminal therapy was begun as described above but her condition became so much worse that it had to be withdrawn after a few days.

Five patients showed no change whatever. These were three precox cases, one paretic in a continuous excitement, and one manic depressive. No matter how abruptly the doses were increased or withdrawn, the disturbed condition showed no change of character or intensity. One, a forty year old hebephrenic precox, had been excited for the three and a half years since her admission. Another hebephrenic, aged forty-five, had been ill six years and continuously excited three years. The third precox, in the hospital six years, had been excited a year and a half. The paretic had been in a gradually increasing excitement several months. The manic depressive was a woman of sixty-seven, three years in hospital, and suffering with typical affective swings separated by an approximately normal period. Following a depression, she was in good condition four months and then began to show signs of excitement. Luminal was given in large doses but the excitement showed its usual course and the treatment was discontinued. After four months the patient quieted down again, that being the usual duration of the excitement.

The periodically excited patients showed a somewhat better reaction. There were six of these who showed some change after the administration of luminal—one manic depressive and five precoxes. Three showed change in the character of the attack and three in duration. The manic depressive patient was admitted for the fourth time six years ago and is now forty-four years old. Her excitements were frequent and severe. In three successive attacks luminal was given from the first day. In no instance did the excitement subside nor was the duration of the attack shortened. There was, however, a definite change in behavior. From a pugnacious, irritable, resistive patient, she became goodnatured, jolly and mischievous. She was much easier to care for and did not do half as much harm to herself or her environment as in previous attacks. Another patient, a precox aged sixty-two, who had been in the hospital sixteen years, was also subdued by the treatment without shortening the attack. She became drowsy, eyes were bloodshot, gait unsteady. If she could have been treated in bed, it is probable that the results would have been excellent, but she retained her negativism in spite of her drowsiness and the treatment had to be abandoned. A fifty year old precox, subject to violent and long continued excitements during the ten years of her stay in the hospital, was benefited to the extent of becoming goodnatured, duration of the excitement remaining as usual.

The three patients whose excited periods were shortened were all cases of dementia precox. One was a woman of seventy or more who had spent most of her life in hospitals for the insane. Her excitements usually lasted about a month with a somewhat shorter quiet interval. Following thirty-three days of quiet, an excitement began and she was at once given luminal, two tablets a day. On the eighth day she was quiet and the medicine was gradually withdrawn. Nineteen days later she was again excited. Three grains of luminal were given and she was quiet next morning. The next day she was excited and the dose was increased to four and a half grains. After one day of quiet, she was excited two days and then remained quiet six weeks, the luminal being discontinued on the fifth day. The following month she was partially excited about two thirds of the time, showing an increase or decrease of excitement in response to decrease or increase in the dose of luminal. She finally became quiet and remained so for six weeks.

The second precox, a resident of the hospital for twenty-five years and now about fifty years of age, was subject to excitements of varying lengths. Following three months of quiet, an excitement came on and luminal was administered. For five weeks she was quieted by luminal for a few days and became excited again as soon as it was withdrawn. A quiet month followed and then an excitement developed which yielded twice to luminal and then showed no further effect. The drug was withdrawn on the tenth day of undiminished excitement and the patient was not quiet again for four months.

The last patient was a woman of thirty-eight who had been in the hospital only six months. Periodical excitements, increasingly severe, had been present for three years prior to admission. She also had syphilis, an arrested pulmonary tuberculosis and an enlarged thyroid, which, however, gave no reaction to tests for endocrine disturbance. Her excited periods were characterized by rapid striding up and down the ward, constant loud scolding and refusal of food. After four or five days of this she would be practically exhausted. Hydrotherapy had no effect. Luminal stopped the excitement within three days the first three months it was used. The next month an excitement lasted twelve days but differed from previous attacks in that she was quiet a large part of each day. This change persisted in subsequent excitements and was of advantage to the patient because she no longer became exhausted and emaciated.

SUMMARY

Thirteen colored female patients suffering from excited phases of mental illness were treated with luminal. Doses ranged from one and a half to four and a half grains daily. Seven periodical excitements and six continuous excitements were thus treated. Ages of patients ranged from thirty-five to seventy-five. Nine were cases of dementia precox, two of general paresis and two of manic depressive psychosis.

Two cases, one general paretic and one long standing case of precox, showed definite increase in the severity of the symptoms.

Five cases showed no change whatever. These were three precox cases, one general paretic and one manic depressive.

Of the remaining six, three showed a change in the character of the excitement, two showed a shortening of the excited period and one showed both change and shortening. The change in all four cases was for the better. Three patients usually destructive, pugnacious and unmanageable, became silly, mischievous and good natured. One changed from a state of activity lasting day and night and resulting in exhaustion, to an intermittent activity which left her quiet a part of each day. In the three cases where the excited period was shortened, the symptoms came on as soon as the luminal was withdrawn, and ran its usual course.

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Mechanical Aids in the Localization of Brain Tumors

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In a certain number of cases in which brain tumor is suspected, approximately thirty to thirty-five per cent., it is impossible to arrive at a satisfactory localization of the lesion by means of the ordinary neurological examination. Complete eye and ear studies are now included as a routine in every obscure case. A neurologist must know sufficient ophthalmology to recognize the significance of visual field defects, papilledema, or optic atrophy and have enough knowledge of otology to appreciate the localizing value of the Bárány reactions.

Even with the information to be derived from careful study of the function of the second and eighth nerves, our knowledge of the position of the neoplasm is often far from exact. Since brain tumor is a condition in which surgical removal affords the greatest hope for relief, the localization of the growth must be certain if an attempt at extirpation is to be successful. Owing to the physical and mechanical difficulties under which the surgeon must work, the area of the brain that can be exposed and explored is limited. Moreover, it is essential for him to know not only the area of the brain involved but also whether the tumor lies on the cortex or is buried beneath it. Therefore, when the usual routine examinations fail we fall back on mechanical aids to furnish us with the information we must have if successful surgery is to be anticipated.

These aids are, first, x rays, by means of which bone changes in the skull and calcifications in tumor tissue may be determined. Hence the position of the tumor will be revealed and defects in position, size and shape of the ventricles demonstrated after the intraventricular injection of air. Secondly, estimation of the size and shape of the ventricles, by tapping both posterior horns and injecting a dye solution, may give important evidence of the position of the lesion.

Finally, the determination of the degree of tissue resistance by the use of the bipolar electrode needle may reveal the pathological process lying beneath an apparently normal cortex. If after a localization made by the ordinary routine methods the surgeon exposes the suspected area and finds a cortex normal to inspection and palpation, he hesitates to make a transcortical incision. If he cuts into the brain and finds no lesion the damage he does may be irreparable. It requires undoubted evidence of the presence of a tumor beneath the cortex to justify deeper exploration.

If an x ray plate of the head be taken and the shadow due to calcification within a tumor revealed, the localization is positive. Unfortunately this is a relatively rare occurrence. Only about one to two per cent. of tumors show calcification. Pathologically these tumors are usually endothelioma, although cystic suprasellar tumors originating in Rathke's pouch may show calcification in the cyst wall. The meningiomas may show marked thickening of the cranial bones over the tumor. This increase in the depth of the bone is probably due to an infiltration by endotheliomatous cells. Localized thickening of the cranial vault on an x ray plate is of much importance as presumptive evidence that a tumor lies beneath. Erosion of the floor of the sella or of the anterior and posterior clinoid processes occurs with intrasellar and suprasellar growths.

This is mentioned merely to emphasize the fact that erosion of the clinoids is not always due to neoplasm in the neighborhood of the pituitary. Posterior fossa lesions causing marked internal hydrocephalus and dilatation of the third ventricle may produce as marked a destruction of the bony processes about the sella as suprasellar tumors. As the third ventricle dilates downward with the increasing hydrocephalus, its pressure often causes complete disappearance of the clinoids. In the past three years we have seen six cases of cerebellar lesions simulating, from the x ray viewpoint, suprasellar tumors.

In ventriculography the actual tapping of the ventricles, the removal of the fluid and the injection of air is the simplest part of the procedure. It is the correct interpretation of the ventricular shadows on the x ray plate that determines the success or failure of localizing the growth. Since reporting results with ventriculography a year ago, my series includes eleven more cases. That an accurate localization of the tumor was made was confirmed in six cases. In four cases while probably accurate, and the neurological picture seems to confirm our conclusion, positive evidence of the exactness of our findings was not obtainable. In one case we were

misled by our interpretation of the x ray plates. One patient died suddenly six days after the insufflation and removal of the air. He had been symptom free while prone but he sat up and left his bed. He complained of dizziness and died suddenly five hours later of respiratory collapse. Autopsy revealed a correctly localized lesion in the posterior fossa. No foraminal cone about the cerebellum, hemorrhage into the ventricles, or other cause for his death was apparent.

Our attitude towards ventriculography is as follows: We consider it rather as a last resort in localization. If the neurological signs are at all convincing we operate in the area they suggest. If this exploration is negative or if only general signs of tumor without localizing evidence are present we feel that it is justifiable to assume the risk accompanying ventriculography. All operators, save Dandy, have experienced a five to ten per cent. mortality from the air injection. This is too high unless we are certain that a tumor is present and that we cannot locate it by less hazardous means. The mortality from unoperated and unchecked brain tumor is high enough to justify any risk to determine its position. But the unfortunate fact remains that most tumors localizable by ventriculography have reached such a size or are so deep seated that surgical removal is impossible.

Since the mortality rate in air injection is unquestionably high, particularly in cases in which a tendency towards stupor exists, Dandy has suggested ventricular estimation as an alternative measure of localizing value under these conditions. In ventriculography it is necessary to tap the posterior horn of both ventricles. The trephine opening is always made with precisely the same relationship to the occipital protuberance. Normally the ventricle is encountered at the same depth from the surface and the same distance from the midline. On the average, an undilated ventricle contains twenty-five to forty c.c. of cerebrospinal fluid, and should be encountered at a distance of about five centimetres from the surface of the brain.

If following trephine and tap one ventricle seems much larger than its fellow or if one ventricle is not encountered at the normal depth or in the usual position but seems to have been dislocated, this is good presumptive evidence that the cause for its abnormal position is the presence of tumor. With one ventricle smaller than the other the tumor is on the side of the smaller ventricle. If bilateral dilatation of both lateral ventricles exist and if a dye as indigocarmine is injected into one lateral ventricle and recovered on tapping the other, showing that the foramina of Monro is patulous, an internal hydrocephalus is present. The lesion then must lie below the foramen of Monro in the midline or in the posterior fossa. If the dye injected into the lateral ventricle is recovered by cisternal or lumbar puncture the cause for the hydrocephalus lies outside of the basilar cistern and is presumably a meningitis with adhesions.

We have made use of this means of determining the approximate position of a tumor four times. The information derived always fitted into the clinical picture. On one occasion a marked difference in the size of the lateral ventricles led us to the correct opinion that the lesion was supratentorial rather than infratentorial. In three cases of the four, our findings were confirmed. None of these patients showed any ill effects from ventricular tap. This is a simple matter and unless the tumor be in the occipital pole in the line of insertion of the cannula no harmful effects should be expected. If the tumor be in the occipital pole and extend into the ventricle, penetration of the tumor by the cannula might cause hemorrhage into the ventricle or into the tumor. Should this occur, a serious reaction might follow. But compared to ventriculography, ventricular estimation is safe.

Four years ago, two German observers, Meyer and Schluter (1), reported their results from the use of a method of determining tissue resistance. They developed an apparatus whereby the resistance of living tissue to the passage of an electric current could be discovered with sufficient accuracy for clinical use. Briefly the method used is as follows:

The wellknown principle of Wheatstone's bridge was adapted so that a known resistance was introduced into one arm of the circuit. A fine needle containing two platinum wires carefully insulated one from the other, one running to the tip of the needle and the other to a point on the shaft about a centimetre below the tip, so that the current must pass from one contact to the other to complete the circuit, was joined to another arm of the bridge. An audiooscillator, a tuning fork vibrating to an electric current and a calibrated sliding contact for reading accurately the relationship between the known and the unknown resistance were also placed in the circuit. As the needle containing the break in the circuit penetrates into the brain, the current passes from the wire in the tip to return through the wire on the shaft, and the tissue in which the needle is placed sets up a resistance to the passage of the current. This unknown resistance in one arm of the bridge is compared to the known resistance in the other arm of the bridge by estimating the intensity of the sound produced by the tuning fork or audiooscillator as heard in an ordinary radio earphone. The sliding contact is moved up and down its wire until the high pitched hum from the tuning fork disappears. Then the resistance is read off on the calibrations on the slide. This apparatus is compact and can be used in the operating room. The needle to be introduced into the brain is smaller than the cannula used to puncture the ventricles. We have used this apparatus in nineteen cases and have found in every instance that tumor tissue produced a markedly different resistance from normal brain tissue. Gliomatous tumors especially show a marked drop in their resistance to the passage of the current when compared to the normal brain. This resistance change can be demonstrated in formalized brain tissue as well as in the living brain. We have at present no explanation for this difference in the resistance of normal and pathological tissues to the passage of an electric current.

The importance of this method of determining the presence of a subcortical gliomatous lesion is great. Endotheliomata, of course, may by their difference in structure and their greater density give a

greater sense of resistance to an exploring cannula. Not so with glioma. There is no difference to the tactile sense on passing from normal to gliomatous tissue. It is in these cases that the change in electrical resistance will be of the greatest value. Given an apparently normal cortex on laying back a bone flap, if exploration with the electric needle shows that there is a marked difference between the resistance on the surface and in the depths of the brain, it is certain that a lesion lies below. A transcortical incision is then justifiable. It is our hope that eventually we may bring this method of determining the presence of a tumor to such a degree of accuracy that by exploring through a small trephine opening in the skull, an area in which a tumor is suspected, we may be able to establish or exclude the presence of a lesion. The exploring needle is so small that but little damage will be done to that part of the brain through which it is passed.

In conclusion it is our opinion that in the majority of cases, nothing can supersede careful neurological examinations in the localization of brain tumors. But there are cases in which all the signs of general intracranial pressure are present, while the symptoms of localizing significance are extremely vague. It is under these conditions that we suggest the use of these mechanical aids in diagnosis and localization of the lesion. They require special apparatus and experience in its use, but an accurate knowledge of the position of the tumor may thus be gained which can be obtained by no other methods.

REFERENCE

1. Meyer and Schluter: *Zentralblatt für Chirurgie,* 18: 1827, 1921.

Amaurotic Family Idiocy*

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Amaurotic family idiocy is a disease of early infancy. It has an unknown etiology, a definite pathology, a uniform clinical course, and a fatal prognosis. It is chiefly characterized by an early decay of body and mind, blindness and death. Various names were given to this disease of which amaurotic family idiocy, Tay-Sachs disease, infantile cerebral degeneration with symmetrical changes in the macula lutea, and primary amaurotic mental deficiency are best known. But infantile amaurotic idiocy would perhaps be more descriptive of this disease, because it occurs only in infants, amaurosis is always present and idiocy is a constant symptom. It is an uncommon malady and for some obscure reason it affects almost exclusively Jewish children of Russian or Polish parentage. In many cases more than one child in a famiily is affected.

The etiology of this remarkable disease is unknown. The age of the parents, the number of children in the family, and their order of birth have no direct influence. Marked neurotic taint in the family, blood relationship between the parents, traumatic injury to the pregnant mother and toxemia in the child have all been assigned as causes.

The pathology is fairly definite. It is a disease of the central nervous system consisting of a degeneration and disintegration of the nerve cells and ganglia of the brain and spinal cord, leading to neuromuscular weakness, mental deterioration, blindness and death. There is probably a primary cessation of development of the central nervous system and a secondary gradual destruction of the nerve cells.

The symptomatology is that of physical and mental retrogression. An apparently normal healthy baby at birth, begins at about the age of six months to show evidence of general backwardness. The normal developmental progress of infancy ceases and a gradual decadence takes place. The baby loses the power to hold up its head, cannot sit up or carry out properly the usual motor functions of early life. It becomes oblivious to its surroundings and the face assumes a dull, vacant, aimless, idiotic expression. As a result of optic atrophy and degeneration of the retinal ganglia, the power of vision is gradually lost and there is formed a peculiar cherry red spot in the region of the macula lutea and fovea centralis of each eye. Hearing, as a rule, becomes hyperacute. In the beginning of the illness there is a general muscular weakness with slight flaccidity or spasticity of the extremities and a diminution or increase in the reflexes. Nutrition is usually good. In the course of the disease the child loses entirely the power of vision, there is marked spasticity with increase in the reflexes and general or local spasms. It wastes to a skeleton and lies in a helpless condition till death, coming always in the wake of this hopeless disease, finally ends the struggle.

The diagnosis is comparatively easy. The history is always suggestive. A healthy, usually breastfed infant and thriving both physically and mentally begins at about the age of a half year to go downward in body and mind without any definite cause. There is a certain peculiar facial characteristic which is only expressive of this disease. A general physical examination will show changes in the neuromuscular system. There may be paresis of the extremities with slight increase in the reflexes or a general spasticity with exaggerated reflexes. There is usually a strong hyperirritability of the nervous system, so that when the child is suddenly touched or moved it starts as if in fright or may have a general convulsion. Nystagmus and strabismus are not infrequent and hyperacusis is almost constant. An ophthalmoscopic examination of the eyes is essential to a proper diagnosis. In every case of infantile amaurotic idiocy there is seen a circular cherry red spot surrounded by a grayish white halo in the region of the fovea centralis and macula lutea, as shown in Fig. 1. This retinal red spot on a

*From the Pediatric Clinic of Beth Israel Hospital.

whitish background is so pathognomonic of this disease that its presence makes the diagnosis positive while its absence is strong evidence against such a diagnosis. The course of this disease is in all cases almost uniform and its termination is always fatal.

This infantile amaurotic disease should be distinguished from the juvenile type of amaurotic

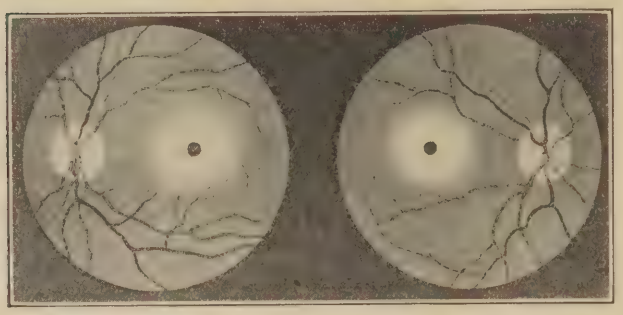

Fig. 1.—The eye grounds in amaurotic family idiocy. From an original drawing by Warren Tay in *Diseases of the Eye*, by Norris and Oliver. Note the circular dark spot in centre of whitish field.

idiocy. The juvenile type occurs at a later age, is not restricted to the Jewish race, and has not the retinal red spot. The onset is more insidious and the disease is more chronic. The infantile type is illustrated in the following cases.

Case I.—V. S. A female infant, fifteen months old. The parents are young, healthy Russian Hebrews. No history of syphilis or other infection in the parents, no parental blood relationship, no taint of neuroses or psychoses in either family. The patient was the first and only child. Pregnancy, birth and lactation were normal. At about five months of age the mother noticed that the child was not developing properly, she also thought that the baby was never just right. On examination there was seen a well developed, well fed, stupid looking baby with the facial characteristics of an amaurotic idiot. The anterior fontanelle was open, the posterior closed. There was a general superficial glandular enlargement. There were two lower incisor teeth. Examination of the heart, lungs, and abdomen was negative. Vision was impaired and there was slight strabismus. The baby was unable to sit unsupported. Wassermann and Pirquet tests were negative. An ophthalmoscopic examination revealed the cherry red spot. The child gradually grew worse and became totally blind. Spasticity became marked and the reflexes much increased. There was great hyperacuity and hyperirritability with frequent attacks of local or general spasms. No Kernig or Babinski sign but the Chvostek sign was present. The baby became greatly emaciated and lay in a helpless condition until a bronchopneumonia made an end to her suffering at the age of twenty-three months.

Case II.—H. G. A male infant, ten months old. The parents are healthy Jewish people, no history of syphilis, alcoholism, or any other chronic ailment, no parental consanguinity. This baby was the third child in the family. The first and second were alive and well. Pregnancy, birth and lactation were normal. The health and development during the early months of life were noneventful. At the age of about half a year it was noticed that the baby did not hold up its head properly and was not bright enough for his age. Examination showed a well developed foolish looking baby. The weight and measurements were normal for the age. Anterior fontanelle was open, had six teeth. Examination of the chest and abdomen was negative. There was spasticity of the extremities with exaggerated reflexes. Vision was almost entirely gone. The typical cherry red spot was present in each eye. Pirquet and Wassermann tests were negative. The child was not brought for further examination. He has no doubt succumbed to this relentless disease.

Case III.—R. S. A female intant, the seventh child of healthy Russian Hebrew parents. First cousins. No history of any chronic illness or psychoses. The child was born at full term, the labor and the breast feeding were normal. Two months before this child was born, her sister, who was the sixth child in the family, died of amaurotic idiocy at the age of twenty-one months. The other children are alive and well. When the baby was only a week or two old the mother noticed that she was very hypersensitive to sound. Between the fourth and seventh month of age she had frequent twitching of the upper eyelids. At the age of eight months the child was unable to raise its head and did not make any effort to sit up. She was dull, listless, and paid no attention to familiar people or objects. At ten months of age, a general physical examination was negative. The anterior fontanelle was open, the posterior closed, cranial sutures closed. There was no nystagmus or strabismus and the child could see fairly well. But an ophthalmoscopic examination already revealed the cherry red spot in each eye. There was no apparent change in the neuromuscular system. The Wassermann and Pirquet tests were negative. At the age of eighteen months there was a marked decline in motor function and a general spasticity with increased reflexes. The face was idiotic, vision almost gone, and hyperacusis was marked. Between the eighteenth and the twenty-third month she grew rapidly worse.

She lost a great deal in weight and became wasted to a skeleton. The anterior fontanelle was now larger than at ten months of age, the posterior fontanelle opened and the cranial sutures separated, due evidently to an accumulation of fluid in the cranial cavity. There was total blindness and an idiotic expression. The mouth was kept almost locked, general spasticity and episthotonus were marked and the reflexes much exaggerated. No Kernig or Babinski sign, no ankle clonus, but the Chvostek sign was present. There were frequent attacks of tonic and clonic convulsions and occasionally facial spasms. At twenty-five months of age the child was in a state of extreme atrophy. She lay in a helpless condition with the arms and legs extended, the hands flexed and contracted and the feet markedly extended. During the twenty-fifth month of age the infant died.

Case IV.—S. L. A male infant, eleven months old. He was the first of young healthy Jewish parents. There was nothing of importance in the parental history, no consanguinity. Pregnancy, birth, and lactation were normal. He was considered a normal child till eight months of age, when it was noticed that he was not doing well. He was dull

and indifferent, could not hold up his head or sit up. Examination at eleven months showed a well developed baby with a careless facial expression, a blind, aimless look, and an occasional silly smile. The anterior fontanelle was open, he had four teeth, examination of the heart, lungs and abdomen was negative, there was slight spasticity of the extremities with an increase in the reflexes. The child was almost blind and had the typical cherry red spot. The measurements were normal and the Wassermann test was negative.

Fig. 2.—Case II. H. G., an amaurotic idiot, ten months old.

Case V.—S. G. Was a male baby seventeen months old. The father and mother were young, healthy Jews. No history of syphilis, tuberculosis, or any other chronic infection or intoxication, no parental consanguinity. The patient was the second child; the first died of pneumonia at eight months of age. Pregnancy, birth, lactation, and the development up to the age of seven and a half months were normal. At this age the child was sick for three days with high fever and was in a semicomatose condition. No diagnosis was made by the attending physician. Immediately following this illness, the baby began to lose strength, could not sit up or hold up the head unsupported as it used to do before the illness. The entire disposition of the child was changed; he was dull, indifferent, paid little attention to his surroundings, and did not grasp objects within reach. At eleven months of age, the infant had an attack of convulsions. At seventeen months of age the child appeared well developed but was dull and listless. There was hardly any vision left. The typical circular cherry red spot in the macula lutea was present. The anterior fontanelle was open. He had four teeth. The chest and abdomen were negative. There was a general spasticity and increase in the reflexes. A fine tremor in the lower extremities was elicited during reflex excitation, no Kernig or Babinski sign, no nystagmus or strabismus, marked hyperacuity and irritability. The weight and measurements were normal for the age. The child died at twenty-two months. A year later the mother gave birth to a normal child who is two years old now and is well in every way.

Case VI.—Gertrude L. Twelve months old, second child. Pregnancy, birth and lactation were normal. The father was somewhat mentally deficient and one of his brothers was in an institution for the feebleminded. Still he was able to support and take care of his family. The mother and the older child were entirely well. No consanguinity. From early infancy the mother noticed that the baby was not as bright and active as other infants of the same age but was assured that it would outgrow its troubles. At eight months of age the mother realized that there was something wrong with the child. It never smiled, had a dejected, sad expression, and looked aimlessly around. Could not sit up or even hold up her head. At the age of one year the baby came under my care. It looked like the other amaurotic idiots; dull, stupid and indifferent. The anterior fontanelle was open, posterior closed, had five teeth, heart, lungs and abdomen were negative. There was a slight, general spasticity and an exaggeration of the reflexes with a marked Chvostek sign. The weight and measurements were normal. The typical cherry red spot was present on the fundi of both eyes. An x ray of the skull, urine examination, a Wassermann and Pirquet tests, a general blood count and an examination of the blood chemistry yielded nothing of importance that could be gleaned from as to the etiology of this elusive and destructive disease. A lumbar puncture was not permitted.

From an observation of these six cases and a few others that have come under my care, some interesting points have presented themselves. All these infantile amaurotic idiots came from parents that were apparently healthy and were young or at most of middle age. They all happened to come from about the same social and economic class. People that knew no privation, led a clean life, with clean habits. Pregnancy, birth, and lactation were normal in all cases. They all had the same peculiar characteristic amaurotic idiotic facies. The voice in all of them had a certain vibrating, snoring nasal quality, due probably to paresis of the soft palate. In all of them the disease passed through the same cycle of events with almost monotonous uniformity, and eventually all met the same fate.

The etiology of this disease and the reason for its predilection for Jewish children is as obscure now as it was when Warren Tay first described it in 1881. The disease is either congenital or acquired. In favor of its being congenital is the very early onset, the identical course of events, and the same termination in all cases. Such exactness and uniformity in the time of onset, the period of illness, and the pathological and clinical manifestations must evidently be caused in all of them by one and the same biological dysfunction. But whence does this mysterious illness come? The parents of all of them seemed to be healthy and apparently came from a healthy ancestry. Parental consanguinity was present only in Case III, and parental mental deficiency in Case VI. Only in Case III were there two children with amaurotic idiocy in the family.

Fig. 3.—Case VI. G. L., an amaurotic idiot, twelve months old.

This group of cases does not suggest a familial tendency to amaurotic idiocy. Still, the Mendelian

principle may perhaps supply the missing etiology.

Assuming that the disease is acquired, then the infant must be infected at birth or immediately after, and there is an incubation period of six or seven months at which time the disease manifests itself.

It is doubtful whether, as is commonly supposed, the infant is well up to about a half year of age and then almost suddenly begins to degenerate in body and mind without evident cause. In many cases it was noticed from early infancy that the children were not exactly normal in every way. There was at all times some evidence of physical and mental ailments. Case V suggests the possibility that in every case some acute illness may be the cause of the breakdown of the nervous system which was at no time equal to the task imposed upon it by the wear and tear of life. But the nature of this supposed nerve infection or intoxication is unknown. It may not be impossible that the much wanted etiology will ultimately be found in some abnormal action or reaction in the endocrine group which has a profound influence over the general metabolism and the life history of the nerve cells. Clinical and experimental cases of hypoparathyroidism and parathyreopriva strongly suggest an analogy between the course and manifestations of amaurotic family idiocy and parathyroid disorders.

There is no known treatment of any value in this disease. Proper feeding and the best hygienic care should be given. Bromides and warm baths are soothing to the irritable nervous system.

SUMMARY

Amaurotic family idiocy is a disease of many mysteries. There is no definite evidence of an hereditary taint, a congenital abnormality, or a latent infection that would throw any light on this destructive disease. That it is found exclusively among Jewish children is a biological enigma. The onset of the disease and the subsequent events in the life and death of the child indicate a degenerative pathogenesis of the central nervous system specially of the nerve cells and ganglia. While it manifests itself at the age of about six months, the exact time the illness begins is quite unknown. The cherry red spot in the macular region of each eye is characteristic.

The symptomatology is that of physical and mental recession. In an apparently healthy child at birth and for some months thereafter, there is a gradual and constant disintegration of body and mind. The diagnosis, in most cases, is comparatively easy. The age of onset, the peculiar facial expression of idiocy and blindness, the hyperirritability and the spasticity, and the cherry red spots make the diagnosis. The disease is chronic and relentless in its course, leading from health through a long degenerative illness to its final relief in death.

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Blocking Off Remote Pain at the Nasal Ganglia*

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The maladies which we loosely designate as neuritis (including sciatica), arthritis, and rheumatism have several traits in common, an outstanding one of which is that they all have a retinue of attendants, such as headache, nausea, sneezing, pain at other points, and so on. In a series of fifty cases I have found an average of three and five tenths symptoms to the case.

In forty-seven of these fifty cases not only the leading symptom but the entire retinue of attending symptoms could be blocked off by cocainizing the one or the other nasal ganglion.

Among these forty-seven are five cases of sciatica which are chosen for a more detailed report because they are generally better defined than other forms of neuritis, and because the number is not so great as to make the report too voluminous.

The three cases which I have been unable to block off will also receive appropriate consideration.

PAINS (NEURITIS, ARTHRITIS, AND RHEUMATISM), AND THEIR ACCOMPANYING SYMPTOMS THAT HAVE BEEN SUCCESSFULLY BLOCKED OFF AT THE NASAL GANGLIA.

Headache:	
Frontal	14
Temporal	5
Postauricular	1
Occipital	10
Vertex: Headache manifesting itself chiefly in the vertex is usually of sphenoid origin, and as will be seen later, cannot be blocked off.	
Eyes, pain in	9
Cheeks, pain and tenderness	8
Ears	1
Eustachian tubes (probably—description vague)	1
Throat:	
Soreness	3
Sense of tightness	2
Rasping	2
Upper teeth	1
Roof of mouth	1
Side of face	1
Neck:	
Down the side	5
Back of	5
Shoulder and arm:	
Shoulder joint	5
Muscles in front of	3
Arm, down its entire length	9
Spot at insertion of deltoid	1
Along nerve, forearm only	1
Elbow	2
Wrist	2
Metacarpus	1
Fingers	2
Trunk:	
Precordial pain and soreness to pressure	4
Pain in lung (?)	1
Pain and soreness between scapular and spine	2
Pain and soreness at lower border ribs	1
Pain and soreness at sacroiliac joints	5
Pain in lumbar region	4
Nausea	5
Weakness	5
Coughing	6
Dyspnea	3
Sneezing	2
Socalled nervousness	5
Dizziness	2
Globus hystericus	2
Uterine pains	1
Lower extremities:	
Pain on flexure of knee	5
Sciatica	5
Pain in thighs and legs (aside from sciatica)	3
Knees	6
Ankles	3
Metatarsus	2
Toes	2

*Epitome of address delivered before the Hillsboro County Medical Society, Tampa, Florida, July 17, 1924.

The following cases, bear in mind, constitute a complete serial of sciatica.

Case I.—E. R., aged twenty-five. Had had some nervous disturbance for several years, including such symptoms as nervousness, nausea, headache, weakness, exhaustion, pains and aches here and there, and even sore spots. One sore spot in particular, sometimes better, sometimes worse, but ever present, was located at the lower border of the ribs on the left side. This she dated to the cranking of a Ford some four years ago. Her general distress was such that she had gone West for a year or two, although the circumstances of the family were such that they could ill afford it.

When first seen she was nervous and undernourished, and suffering from recurrent headache, chiefly left temporal, and recurrent nausea, and from this sore spot. At this juncture the left nasal ganglion was cocainized with eight per cent. cocaine, which relieved the headache, and the sore spot. The latter has never returned.

Later she showed up with pain and soreness in the left sciatic nerve, reaching all the way down to the feet, and of a severity that made walking extremely difficult. It had come on rather suddenly and had persisted some three hours without cessation. When the left nasal ganglion was cocainized, it promptly disappeared, and has never since returned, now some two months.

I would not undertake to say that this was a case of sciatica and would not include it in this report except to make the series complete, although the only factor lacking to make a diagnosis of sciatica was the element of time, for had it continued no other diagnosis would have been possible.

Case II.—E. T., aged twenty-one. For the last six years she had had several attacks of sciatica that had kept her in bed four to six weeks each time. When first seen she was in the throes of an attack involving the right limb, and from which she had then been in bed two weeks. When seen she had a pillow propped under her right hip in an endeavor to find an easy pose. The right nasal ganglion was first blocked with eight per cent. cocaine but with entirely negative results. The left was then likewise blocked, but with a prompt reaction, the pain entirely abating, and leaving behind only a residue of soreness in the sciatic nerve. This is an important point and will be referred to again.

All treatment was now withdrawn and the patient remained up and about even driving as if she had never been afflicted. At the end of forty-eight hours the pain returned. This time she was brought to my office and the pain again blocked off from the left nasal ganglion, the right one being unmolested. Again there was a residue of soreness left.

Nasal examination with a Holmes lamp placed the left ethmoid region under suspicion. This was put under treatment with one per cent. silver nitrate applied every other day. This time the symptoms did not return for a week, and when they did, in modified form. Again they were blocked off and treatment continued for four weeks when she was dismissed as well.

This case reveals two points that are worthy of note. In the first place, though the trouble was with the right sciatic nerve, it could be blocked off only from the opposite side. Experience in nerve blocking indicates that *when the symptom is above the neck it can be blocked off from the same side only, but below the neck, from the same, or from the opposite side—never from either indiscriminately.*

The other point is that after the trouble was blocked off as completely as possible, and when no kind of motion would provoke pain, there was still a residue of soreness in the affected nerve. In a recent case of arthritis, or neuritis, all symptoms can be so completely blocked off that there is no trace left. But after a case has persisted for a time, there supervenes a soreness that is entirely refractory to all attempts at blocking.

As I interpret this, in a recent case of arthritis, neuritis, or rheumatism, that can be blocked off entirely, there is chiefly an impulse[1] to deal with—a something that is being sent along the course of the nerves from some distant point to the locus of distress.

All one has to do to stop the pain is to cut in between. According to the author's law—all impulses from a nasal bloc to remote parts of the body must pass through the nasal ganglion and can accordingly be blocked off at that point. But under certain circumstances, not fully understood yet, when this impulse has been propelled to the same locus for a time, there develops a local pathology—a thing entirely apart from the impulse in question. The symptoms resulting from this local pathology cannot be blocked off.

Case III.—O. D. G. A business man in the forties who had had for some two or three years a set of symptoms which had been diagnosed on the one hand as appendicitis, and on the other as not. He had not been operated on. He had also had some nose symptoms and had had some kind of nasal operation performed, the exact nature of which I am not sure.

When seen he had been in bed two months with sciatica, involving the left leg, but was then able to hobble out on crutches, and it was now that he came to my office. At this time the acute pain had abated but there was quite a residue of soreness ranging all the way from the hip to the foot. Also the muscles of the leg seemed too short as he expressed it, so that attempts to straighten it out not only met with resistance but acute pain.

The left nasal ganglion was cocainized with eight per cent. cocaine with the result that the tautness of the muscles relaxed and he could then straighten the leg with ease, but the soreness did not abate. On two subsequent occasions it was blocked with the same result. Blocking the right nasal ganglion had no effect.

As I interpret this case, the impulse from the nasal bloc which had probably been of considerable amperage at first, was now reduced to relatively insignificant proportions and manifested itself chiefly through tautening the muscles. When this was blocked off, the muscles would relax. The local pathology was still at or near its height, and of course it is unthinkable that symptoms growing out of a local pathology could be blocked off at the nasal ganglion.

Case IV.—Cliff H., a negro in the thirties. Had been in bed seven weeks with sciatica when first seen, the trouble affecting the right leg. Attempts were made to block it off from both nasal ganglia but apparently without success. The cocaine applied to the right nasal ganglion seemed to make it worse if the distress could be measured by his groans. He insisted that it did make it worse. After some fifteen minutes or so it was given up as a failure. But two days later the family in which he served reported that in a few minutes after I was gone the negro was up and walking about without discomfort and that he cooked supper that night; and the next day and the next, attended to his household duties, but on the third day his pain returned, whereupon they brought him to my office.

On this second occasion it was blocked off successfully from the right side, and while the reaction was still slow, it was more prompt than the first time. Also on this second occasion he complained of the pain getting worse when the cocaine was first applied to the nasal ganglion. And as the pain began to abate he described it as "moving"—first, it was worse in the hip and then the leg, and then the foot and so on. In blocking off neuritis and arthritis I have found this not an uncommon phenomenon. As the pain begins to turn loose in one place the patient reports it as moving to some other.

At the present writing this patient is still under treatment, it having developed that he has a right hyperplastic ethmoiditis. He reports once a week for treatment, and rarely has enough pain to hinder his duties but says he has a little pain nearly every morning. About two weeks ago he got married, which may or may not have influenced the course of the case.

Case V.—Mr. P., in the forties, referred by Dr. Leffingwell. He had had sciatica off and on for four years, he said, "mostly on." A few weeks ago at a revival meeting he was healed, but had sinned again. When he came into my office navigation seemed quite difficult. I cocainized the right nasal ganglion and hardly had the cocaine been applied when he began to groan and to squirm in the chair and there is no doubt about it augmenting the pain. Then the pain began to move and soon it had abated altogether. He returned the next day still free from pain and again the right nasal ganglion was cocainized and although free of pain in the sciatic nerve in the beginning, pain soon occurred and reached proportions that he described as quite considerable but of short duration. Three days later he returned, still free of pain. This time the cocaine did not excite any pain. At this juncture he passed from observation.

This completes the series of cases of sciatica. But it was pointed out that in this group of fifty cases there were three that could not be blocked off successfully at the nasal ganglia, as follows:

Case VI.—Miss D., in the fifties. Had rheumatism in the shoulders, back, hips, and legs. The application of eight per cent cocaine to the nasal ganglia had no effect whatever on the severity of the pain. Miss D. had had gastroenterostomy done a year or so ago and still had a sensitive palpable mass in the vicinity of the duodenum. Whether that was the cause of the rheumatism I do not know.

Case VII.—Dr. G., in the fifties. Had had rheumatism, sciatica, neuritis, arthritis, "singly and separately and all together," for the lest twenty years. They could not be blocked off. There was no evidence of disease in the ears, nose or throat.

Case VIII.—Dr. N. Similar history to the above.

I do not know the source of the trouble in any of these three cases but every effort has been made to fasten suspicion on some point in the nasal blocs, but without success. So it is a reasonable conclusion that the source of trouble in these cases is in some other part of the body.

From the foregoing it is seen that there is a close relationship between neuritis, arthritis, and rheumatism. Indeed when allowance is made for differences in location and intensity, and for length of duration, all other differences seem to vanish. That some cases have their origin in a nasal bloc, and some do not, does not in any way invalidate this conclusion. But it does make it desirable, not only for purposes of interpretation, but also for treatment, to know the exact origin of any given case. The author's test when skillfully applied and intelligently interpreted is an instrument of unerring precision in determining in any given case whether it originates in a nasal bloc, and if so on which side; and the prediction is ventured that discriminating diagnosticians will come to have it used in all cases of obscure symptomatology or origin. It can be applied by any competent rhinologist.

The interpretation offered in this connection introduces a new conception into pathology—the conception of the transference along the course of nerves of an impulse of such character, and such proportions, as not only to augment a local pathology, but possibly to initiate pathological processes at the locus of registration wherever it might be.

CONCLUSIONS

From the evidence in hand the following conclusions seem imperative:

1. That disturbances arising in either nasal bloc may be transmitted to various parts of the trunk and extremities, even to the fingers and toes, and there registered in the form of neuritis, arthritis, and rheumatism, or other symptoms, but in so doing they must pass the nasal ganglion and can accordingly be blocked off at that point.

2. When such a disturbance is transmitted to the same locus for a time, a local pathology supervenes, and the pain and soreness growing out of such local lesion cannot be blocked off.

3. In a recent attack originating in a nasal bloc, and before local pathology becomes pronounced, the pain can be entirely relieved by blocking the nasal ganglion, but where the attack is of long standing, the local pathology may become the chief source of discomfort, or it is conceivable that the original disturbance emanating from the nasal bloc may be entirely withdrawn, in which case the local lesion becomes the only source of discomfort, and in that case, blocking the nasal ganglion would have no effect.

4. The author's test is a convenient and unerring method of determining in any given case of neuritis, arthritis, or rheumatism, or other obscure symptom, whether it has its origin in a nasal bloc, and also in which nasal bloc it originates.

Symposium on Bones and Joints

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, NOVEMBER 5, 1924

Knee Joint Injuries—Diagnosis and Treatment*

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The frequency of injury and internal derangement of the knee joint makes this subject of importance to every practitioner. Our accident insurance laws and compensation adjustment have revealed with grave significance the large numbers of these injuries which have by inadequate treatment resulted in permanent disability.

A thorough knowledge of the anatomy of the joint is the first essential in obtaining a correct diagnosis and a successful result in the treatment of knee joint derangements. The action of the joint is mainly in flexion and extension but there is also rotation and a slight degree of anteroposterior motion. The following structures of the joint, with all their ramifications and attachments, should be carefully considered:

1. The capsule.
2. External lateral ligament, which is in two parts.
3. Internal lateral ligament, which is very closely connected with the internal semilunar cartilage.
4. The internal semilunar cartilage with its two horns, anterior and posterior, widely separated from one another.
5. The external semilunar cartilage, circular in outline, with its two ends more closely together and less firmly attached than the internal semilunar cartilage, thus allowing more play when the joint is functioning, thereby being less frequently caught or injured.
6. The crucial ligaments upon which the stability of the joint in extension depends. These crucial ligaments lie without the synovial membrane.
7. The synovial membrane which "lines the deep aspect of the capsule from which it is reflected on to those portions of the femur and tibia which are intracapsular but not articular.
8. The tibial spine.
9. The tibial tubercle.
10. The posterior ligament and the tendons of the muscles which flex and extend the joint.

It is also necessary to know the relationships of all these structures, especially when the joint is functioning, in order to fully understand the result and extent of injury.

X rays should be made in every knee joint injury. It is true that when the soft structures alone are involved the x ray will be of little value in differential diagnosis. At the same time, we are so frequently surprised at the x ray findings that this rule of taking an x ray should be laid down in every instance. In this regard it may be said that gas inflation of the joint has been used to advantage in conditions of injury to the semilunar cartilage by throwing it into sharp relief and thus producing a distinct shadow in the picture. This opens up a field of interesting study.

*Presented before the New York City Hospital Alumni Society, April 16, 1924.

TRAUMATIC SYNOVITIS

The most frequent result of injury to the knee joint is a traumatic synovitis and the immediate swelling with pain and a moderate degree of limitation of motion. These are the cases in which there is no crushing, fracture or displacement of any of the joint structures. Treatment should be immediately instituted and a wet cold compress, including chipped ice in its folds, should be applied for twenty-four hours. The leg should then be put up in a plaster of Paris cast extending from the groin to the ankle and kept immobilized in this dressing for ten days. The patient may be permitted to walk the week after the accident, at which time he is still wearing the plaster of Paris cast. When the cast is removed a compression bandage is applied over a thin layer of felt. This partially fixes the joint and at the same time acts as a compression bandage. These conditions should clear up completely at the end of one month's time.

Chronic synovitis of the knee joint is the result of unsuccessful treatment of the acute form. This gives us much more trouble. The leg should be put up in a plaster dressing, as described above, and so treated from four to eight weeks, depending upon the chronicity of the condition. After the plaster cast is removed, I apply a compression bandage with a generous layer of an ointment containing iodine. It takes from three to four months to cure these conditions. If at the end of this time, however, a satisfactory result has not been obtained, I do not hesitate to open the joint through a lateral incision and after irrigation with a one to six thousand bichloride solution, inject into the joint a ten per cent. solution of iodoform emulsion.

This operation comprises a longitudinal incision to the outer side of the patella two inches long, through which an entrance to the joint is obtained.

The synovial membrane is carefully lifted and retracted with catgut strands, one on either side of the opening. After the injection of the iodoform emulsion, the synovial membrane is first carefully lifted by these catgut strands and united by a thin chromacized continuous catgut suture. The subcutaneous tissue is then sutured and the skin incision is closed with plain No. 1 catgut suture. The postoperative treatment is similar to that already described for an acute synovitis.

INTERNAL LATERAL LIGAMENT

When the injury has been associated with a definite twist or wrench, one must carefully examine for a rent or tear in the internal lateral ligament. It has been well stated that the strength of the knee joint is proportionate to the strength of the internal lateral ligament. We may also find a portion of the upper end of the tibia pulled off and still remaining attached to the internal lateral ligament. Marked tenderness over the internal surface of the joint with the excessive effusion and inflammatory reaction that follows will determine this diagnosis. An x ray will reveal whether or not any fragment of the tibia has been separated.

These conditions, also, demand immediate immobilization. If there is a separation of a fragment from the upper end of the tibia, this must carefully be cut down upon and anchored firmly in position with deeply buried kangaroo tendon, carried through holes drilled in the upper end of the tibia.

INJURY TO THE INTERNAL SEMILUNAR CARTILAGE

This is the next condition we find in frequency of occurrence. It occurs most often when the knee is flexed in weight bearing and slightly twisted. It can occur only with a tearing or stretching of the internal lateral ligament and whether or not the cartilage is injured depends upon the severity of the injury to the internal lateral ligament. It may, however, have been loosened or detached at some prior time and become displaced a second time, even while the patient is in bed, by a slight twisting of the knee without any special force or traumatism. The symptoms are those of sudden pain with a locking of the joint and inability to extend the leg fully. The patient himself may then, by maneuvring the joint about, be able to replace the cartilage in its normal position. This, however, is followed by considerable pain and excessive effusion in the joint. At other times, however, such manipulation by the patient is not successful and he appeals to the doctor for assistance. The following manipulation should then be carried out:

The leg and thigh should be firmly flexed as the patient lies upon the table. Grasping the foot with one hand and placing the other hand above the knee, at the same time the foot is rotated inward as much as possible and the patient is instructed to suddenly extend the leg with a snap. During this whole manipulation the operator assists in this manœuvre. The ability to fully extend the leg determines the success of this manipulation.

Injuries to the internal semilunar cartilage are eight to nine times more frequent than injury to the external semilunar cartilage. This is due to the firmness with which the internal semilunar cartilage is attached, in comparison to that of the external semilunar cartilage; also, the weight of the body being carried more to the inner than to the outer side of the knee joint. There follows an extreme tenderness over the site of the cartilage which is definitely prognostic. The cartilage may be split, cracked, torn, folded upon itself or dislodged. I have found a small portion of cartilage not larger than a millet seed giving severe pain with intermittent attacks of locking, pain and disability.

If after the first displacement the damaged cartilage can be reduced by manipulation and the leg extended, a fixation splint should be applied for ten days, after which a firm bandage should be continued for two weeks longer. Repeated locking or catching of the joint with symptoms of derangement of the cartilage demands operation and the removal of the cartilage as a whole or in part, depending upon the condition found.

EXTERNAL SEMILUNAR CARTILAGE

Injuries to the external semilunar cartilage are much less frequent than those of the internal semilunar cartilage, as previously stated. The symptoms are somewhat similar, however, with the difference that the pain and tenderness are all referred to the external side of the joint. The treatment is the same and the same rules hold good as to whether or not operation should be performed as in the case with the internal semilunar cartilage.

LOOSE BODIES IN THE KNEE JOINT

These are of three types: Type I. The symptoms of a loose body are those of a sudden catch with an immediate release, followed by but little pain and slight, if any, effusion. A loose body can sometimes be felt from time to time by the patient and it is not always in the same location. These loose bodies may be pedunculated and attached by a longer or shorter pedicle. They are of different sizes, ranging from the size of a pea to that of a bean. They can usually be detected by the x ray as their consistency is partly osseous. The origin of these loose bodies can often be accounted for by a previous injury, at which time a portion of the articular surface of the femur or patella has been knocked off or loosened. Those that are not completely detached may be at first small but gradually increase in size and easily become caught between the joint surfaces, giving the sudden catching so graphically described by the patient. A small portion of one of the semilunar cartilages may also be broken off and become a free loose body in the joint. Otherwise the joint is found to be normal. The only satisfactory treatment of these loose bodies in their removal by operation.

Type II. Multiple loose bodies, usually two or three in number, may result from a pathological condition, such as tuberculosis or other of the arthritides. There are usually two or three in number, seldom more. They are derived from the femoral and patellar surfaces in most cases. They are mostly cartilaginous but they also may contain small bony deposits.

Type III. Another type of multiple loose bodies found in the joint are those chondromata which develop in great numbers. Several hundred of these

may be found in the joint. These are derived from the synovial villi and are pedunculated or free. They may lie for a long time in the recesses of the synovial chamber without giving any trouble until they are dislodged. They range in size from a millet seed to the size of a bean. They are of the same structure as the last described and are usually much smaller in size, but they occur in larger numbers. They may develop also from the infrapatella fat body. The primary injury may cause a breaking through of a portion of the fat body and repeated injuries to this result in a cicatrization and hardening of the pedunculated mass or masses, which in time become detached.

INJURY TO THE CRUCIAL LIGAMENTS

This follows only after severe injury to the knee joint. The anterior crucial ligament is much more liable to injury than the posterior and as a matter of fact, it seldom happens that the posterior crucial ligament is involved, except in those cases associated with complete dislocation of the knee. It frequently happens in severe injuries that both the internal semilunar cartilage and the anterior crucial ligament are torn. With the loosening of the anterior crucial ligament there is a greater range of abduction in a semiflexed position. Hypermobility of the joint is very apparent and this is noted best with the knee in full extension. Internal rotation of the tibia on the femur with the knee in full extension is also considered an important diagnostic point by Sir Robert Jones in injury to the crucial ligaments. There is also with the overstretching of the anterior crucial ligament a certain amount of lateral rocking of the joint. The treatment of the injuries to these crucial ligaments is immediate immobilization, which should be continued for two months' time. Gradual motion is allowed after this, but the convalescence is necessarily long and tedious. The question of operation should be considered in these cases but conservative treatment has so far proved more advisable in the majority of cases.

AVULSION OF THE TUBEROSITY OF THE TIBIA

This occurs in youth and results in a separation, partial or complete, of the tuberosity from the tibia with associated signs of tenderness and inflammation over this area. Pain is felt over the insertion of the patella tendon. The symptoms may not be severe and may run a more or less chronic course. X ray findings will give corroborative evidence of the diagnosis and should the separation of the tuberosity be complete, and if it is pulled some distance from its attachment to the tibia, operation will be necessary. This, however, is seldom the case and fixation and rest are usually sufficient to relieve the condition.

AVULSION OF THE TIBIAL SPINE

This occurs in some cases of severe injury associated with or without a rupture of the anterior crucial ligament. When this happens, the main point in diagnosing is that the displaced spine prevents full extension of the joint. It is true that the same diagnostic symptom has been mentioned in relation to displaced internal semilunar cartilage, but in the first instance it is a bone block and in the case of the cartilage it is a soft cartilaginous block which can readily be distinguished from bone. An x ray will corroborate the diagnosis. If recognized immediately and treated by immobilization after reduction, the prognosis is good. In older cases where the fragment still obstructs the joint in extension, it may be removed from excellent results. When it is associated with the rupture of the anterior crucial ligament, the prognosis is not so favorable.

ARTHROTOMY OF THE KNEE JOINT

When an arthrotomy of the joint is demanded for any internal derangement of the knee joint, the two following operations commend themselves. Both of these have been devised by Sir Robert Jones. First, entrance into the joint laterally; second, entrance into the joint through the patella.

If there is no doubt as to the exact condition present and that it refers definitely to the internal semilunar cartilage or the inner surface of the joint, we may enter the joint laterally. "A tourniquet is applied to the thigh, and the leg to be operated upon is flexed over the end of the table. With the knee flexed at a right angle, a curved incision is made two inches in length. The incision, which involves the skin only, begins one fourth inch internally to the inner edge of the patella at its center. The cut curves downwards and backwards for one inch until it reaches the level of the joint and for the remaining inch it runs parallel to the upper articular surface of the tibia. Great care is required not to prolong this incision so far posteriorly as to endanger the anterior fibers of the internal lateral ligament. The joint is opened and two small retractors separate the line of incision into the synovial membrane." An inspection can now be made of the joint structures at their inner portion, the semilunar cartilage examined, broken portions of it removed, or the entire cartilage may be dissected away, if it is deemed advisable.

THE INFRAPATELLA ROUTE

The infrapatella route, or the split patella route, is the operation of choice whenever a thorough examination of the whole joint surface is desired, including, as it should, the crucial ligaments. It is peculiarly adapted to those cases which give rather an indefinite history of the location of the derangement, as it has not infrequently happened that the external semilunar cartilage has been involved and only the internal semilunar cartilage was suspected. In operations for loose bodies also, these are much more easily found by the exposure obtained through the split patella route. A tourniquet having been applied, the leg hangs over the end of the table, and a long curved incision beginning two inches above the patella and extending down almost to the tibial tubercle is made through the skin and subcutaneous tissue. The patella, standing out in bold relief as it does, is now sawn through its center longitudinally, either with a motor driven or hand saw, through almost its entire thickness. With a thin bladed ostetome the separation of the two fragments is completed. The quadriceps extensor tendon is now split upwards to a point two inches above the patella and the patella tendon is split one inch downwards toward the tibial tubercle. Through this opening, by means of retractors, a very good view of the joint is now obtained. After the operation within the

joint is completed, the tendon of the quadraceps extensor is carefully drawn together with chromacized catgut or fine kangaroo tendon, as is also the patella tendon. The cut periosteum and thick fibrous tissue over the front of the patella is now closely united along its edges by a continuous chromacized catgut suture, thus closely approximating the cut surfaces of the patella. No further suturing of the patellar fragments is necessary.

The postoperative treatment of both of these operations consists in immobilizing with plaster of Paris, followed by passive motion and massage and subsequently active motion and weightbearing. The length of time, however, differs in each instance. In the first, at the end of one week, the fixation splint is removed, massage is begun and slight active and passive motion instituted. At the end of the third week the patient should be allowed to walk with freedom and have full range of motion.

In the case of the split patella operation, fixation in splint is continued for two weeks, after which time active and passive motion is begun and patient gradually begins function of the joint, both in motion and weightbearing, being able to walk freely at the end of five weeks' time.

FRACTURES OF THE PATELLA

Fractures of the patella, with few exceptions, should be operated upon. There is little danger in the operation and an operation guarantees a good bony union, whereas otherwise the best result usually obtained is that of a fibrous union. The best operation for fracture of the patella is that of encircling the bone by two circular kangaroo tendons, one introduced on the outer side of the patella, running about its margin and coming out at the same side; the second being introduced at the opposite side, being passed about the circumference of the bone and coming out again on this opposite side. These two sutures are then at the same time drawn firmly together, thus bringing the fragments of bone in very close apposition and being held firmly in place by strong kangaroo tendon which remains unabsorbed for several weeks, giving sufficient time for good bony union to take place.

This operative procedure is applicable for all kinds of fractures of the patella. After operation the limb is encased in plaster of Paris and active and passive motion is begun in three weeks' time.

CONCLUSION

In closing, I wish to state that one of the greatest advances in surgery during the past decade has been in the field of operative technic upon the knee joint. The old idea that the knee joint is particularly prone to infection has been proven to be quite erroneous. In fact, it may be said that this joint possesses particular powers of resistance which enable us, with proper technic and aseptic precautions, to enter it without hesitancy. The results that are being obtained today in relation to operative treatment of derangements of the knee joint are most excellent and many types of cases heretofore relegated to permanent disability are offered a very favorable chance of perfect recovery.

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Operative Treatment of Osteomyelitis in Long Bones

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Of all the surgical operations practised at the present time, probably the most unsatisfactory to patient and surgeon alike are those undertaken for the relief of chronic bone disease, especially for chronic osteomyelitis of long bones. The history of such cases is usually a depressing one, consisting of an account of continuous or intermittent suppuration from a persistent sinus or sinuses varied by the recurrence of acute trouble followed by operation and inevitable disappointment. After one of these interludes of pain, insomnia and fever, the flow of pus resumes the even tenor of its way.

These cases may persist for years, from childhood to adolescence and through adolescence far into adult life, unless a more than usually severe exacerbation of sepsis or the onset of amyloid disease, ends the patient's troubles by cutting short his or her life.

Many of these mournful legends are illustrated by pathetic ossuaries, fragments of necrosed bone which the sufferers have collected as melancholy souvenirs of epochs of intenser suffering in a life time of discomfort. They will relate how on this, that or another occasion the bone was "scraped." Some of these scrapings were so obviously futile that the listener is reminded of Sydney Smith's famous remark to the little girl who told him that she was stroking the back of her tortoise to tickle it. He said, "you might as well stroke the dome of St. Paul's to tickle the Dean and Chapter."

The surgical problem is that of a septic cavity with rigid walls; many attempts have been made to solve this problem, some along the lines followed by a dentist, when dealing with a cavity in a carious tooth, by introducing an amalgam of metals as a filling, others have used calcified sponge. Some have employed antiseptic pastes which introduced hot sets solid on cooling. Others have attempted to obliterate the cavities by means of pedunculated grafts of muscle, a procedure obviously doomed to failure in the presence of any residual sepsis in the bone cavity. The success attending these methods are, on the whole mediocre, but they all have one aim in common, the obliteration of the cavity in the bone.

The method to be described has this object in

Fig. 1.—Case III, H. S.

Fig. 2.—Case III, H. S.

view, but attains it not by the introduction of a foreign body into a cavity, but by the conversion of the cylinder of bone into a lath, nothing but the posterior thickness of the shaft being left. The free removal of all overhanging bone permits the periosteal sleeve to collapse upon the residual strut of bone. New bone is laid down from the adjacent surfaces of shaft and periosteum.

TECHNIC

The conservation of the periosteum is essential in this operation. The incision is made on the surgical aspect of the bone, down to the periosteum for the whole length of the diseased area; the periosteum is then carefully separated from the bone by means of a rongeur; this should have a chisellike edge so that an abundant supply of bone cells from the cambium layer is elevated with the periosteum. The subsequent rate of repair will be directly influenced by the care with which this operation is carried out. The periosteum is separated up to the limit of the bone which it is decided to retain, always remembering that it is necessary to continue the removal of bone until nothing is left but the two plane surfaces of the posterior aspects of the bone.

It is hardly necessary to say that with the most ordinary care, by working within the periosteal sleeve, the danger of the damage to soft parts is negligible. As soon as sufficient of the bone has been stripped the anterior aspect of the shaft is removed by suitably planned cuts into the bone. This may be done with an Albee saw or with chisel and mallet as desired. The saw saves much time and labor but the necessary trimming of the residual shaft may be effected by means of chisel and gouge. The surface of the bone which remains is carefully scrutinized for grey areas of necrosis, or for sinuses or actual perforations and all disease tissue is energetically removed.

It should next be ascertained how far the periosteum and soft parts will glide over the remaining shaft of bone. Any projections interfering with this should be removed as it is important to reduce the number of dead spaces to a minimum.

When the operative area is in the neighborhood of a joint great care must be exercised to avoid damage to the articular cartilage and the bone should be shaped so as to avoid a steep descent from the neighborhood of the joint. This is particularly necessary when dealing with the tibia as if too steep a gradient is allowed it will be difficult to get the raw surface of the bone covered by the flaps of soft tissue and periosteum. When all the diseased tissue has been removed we have a sort of keel of bone to which is hinged on each side a flap of periosteum originally covering half the expanded shaft and preserving its original connections with the soft parts in relation to the bone, and in consequence of maintaining its blood supply intact. These flaps are united over the line of the original incision by interrupted silk worm gut sutures. This brings about the abolition of nearly all the dead space, any space left at the upper extremity of the bone being carefully plugged with gauze and allowed to fill up from the bottom.

If all diseased tissue has been removed such cavities will become obliterated by a vigorous growth of fine healthy looking granulations and the discharge will be no greater than that of any other healthy granulating surface. Increase of or persistence of purulent discharge usually means some undetected focus of caries or recrudescence of caries in some part of the bone; these always indicate subsequent minor operative proceedings.

The following cases will illustrate the method; if the solidity of the bone permits the patients should be allowed on their feet at the earliest moment; use is the greatest stimulus to bone growth.

Fig. 3.—Case III, H. S.

Fig. 4.—Case III, H. S.

To secure success and rapid healing, the surgery must be very bold and very radical. Half hearted operations are better left undone.

ILLUSTRATIVE CASES

Case I.—P. S., aged twenty-eight, duration of disease one year. Admitted May 2, 1923. History of much pain and disability in leg.

Operation June 10, 1923. Great thickening and sclerosis of bone and caries in medullary canal—extending nearly half the length of the shaft. Complete operation—removal of all but a lath of bone—so that no overhanging edges were left—the separated leaves of periosteum came into good contact with the denuded bone.

His convalescence was uneventful—and there was abundant formations of new bone. The wound healed by first intention. Discharged July 28, 1923. Total time in hospital after operation twenty-one days.

Case II.—I. D., aged twenty-two. Necrosis—chronic osteomyelitis of right tibia. Leg riddled and suppurating sinuses—duration ten years. Admitted July 3, 1923.

Operation July 9, 1923. Complete operation. Bone much sclerosed and thickened. Rarefying osteitis in medullary aspect—pus—no massive necrosis—no involucrum. All bone removed in anterior and lateral aspects, only a lath of bone left behind. The periosteum was carefully conserved.

One small secondary operation was found to be necessary. The lower half of the wound healed by first intention, but there was a small cavity left at the upper end which was not quite healed when the patient left the hospital on October 3, 1923. Stay in hospital June 21st to October 2nd.

Case III.—H. S., aged twelve. Much discharge, massive necrosis and involucrum. Admitted July 30, 1923. Operation July 31, 1923.

Complete removal of all but post layer of involucrum, cylinder of necrosed shaft removed—it was lying free—periosteum came into good contact with denuded area—healed by first intention lower half wound. A cavity which was left in the upper part was plugged and granulated up. Discharged February 24, 1923. Stay in hospital fifty-five days.

Case IV.—J. R., aged twelve—left tibia. Chronic osteomyelitis. Duration—6/12. Admitted June 4, 1923. Necrosed sinus—sequestra—foul and copious discharge. General health very poor.

Operation: June 12, 1923. Sequestra removed. All but posterior part of bone removed. Periosteum in good contact with denuded area in lower two thirds of wound. Cavity left in upper part—which was plugged—on August 21, 1923—the upper part was explored and a large piece of old necrotic stuff found under edge of an overhanging ledge of bone. This was chiseled away, the piece removed and all granulations removed at the same time. Packed with gauze, wound securely healed in its entire extent by November 10, 1923, when patient was discharged. General condition was much improved.

Case V.—A. H., aged fifteen, chronic osteomyelitis of ulna. Duration one year. The ulna border of the arm was riddled with sinuses, much discharge, sequestra. Admitted June 30, 1923. Operation: July 10, 1923—large sequestra round rather patchy involucrum, many sinuses, bone removed so as to have plane surface of bone—periosteal sleeve came into good contact with the denuded area. Discharged August 29, 1923. Good formation of bone and wound soundly healed.

Rational Treatment of Fractures in the Region of the Elbow Joint

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The elbow is a very important and also a very complicated joint. While the shoulder region is also complicated and essential, performing so many necessary functions, still the scapula can often serve as a substitute in performing these functions. The elbow joint, on the contrary, has no substitute. The two joints, viz., the humeroulnar and the radioulnar, have the responsibility of earning our livelihood and also feeding us. Justly does Jones (6) say: "Any defect in the muscles, ligaments, or articular surfaces connected with these movements is so annoying to the patient that he declares that they make this joint practically useless."

One notes with great regret that proper treatment of this joint is very often neglected. The blame may justly be charged to one or both of two factors. 1. This injury does not confine the patient to bed, hence he is not taken to a hospital where proper and expert treatment can be instituted. Consequently, the case is treated in a dispensary with its hustle and bustle, by a general practitioner, or by a layman (bone setter). The result, therefore, can not be compared to the fractures of the lower extremity. 2. If the fracture is one that may result in a deformity at the knee or thigh, the patient or his relatives could easily observe it and conclude that it will interfere with proper function. The fractures of the upper extremity, with the exception of the wrist joint, on the contrary, do not exhibit the deformity so prominently to the patient, hence he himself is hopeful that the result will be good. He is thus satisfied with less specialized treatment for this essential joint than he would choose for the lower limb.

Sir Robert Jones (6) has greatly simplified the understanding of the fractures in the region of the elbow joint with his emphatic precept: "There is one golden rule regarding fractures of the elbow; they should all be treated with the elbow fully flexed and the forearm supinated, with the single exception of fracture of the olecranon, which requires full extension." Many surgeons state on their operation charts that the fracture was put up in the Jones posi-

FIG. 1 FIG. 2 FIG. 3

FIG. 1.—Case I, G. S. Showing callus formation and position of the posterior fragment after a few weeks' treatments. A. Lateral view. B. Anteroposterior view.

FIG. 2.—Case I, G. S. Final result; showing good position of the lower fragment and only slight limitation to flexion.

FIG. 3.—Case II, S. H. Showing marked displacement and rotation of the lower fragment.

tion but how many are put up in the real Jones position?

POSITION

The proper position is only of secondary importance; the aftertreatment is, as in all fractures, of paramount value and must be accurately carried out. The failure to obtain good results in this fracture can often be justly traced to the neglected aftertreatments. Whether one believes in early massage or late massage, active or passive motion, no rule can be strictly adhered to in this region. One must use a combination of methods.

Discussion of this fracture which falls so often to the lot of the general practitioner should be of great interest.

MECHANICS OF THE FRACTURE

For our purpose it is sufficient to state that: "Fractures of the humerus in the vicinity of the elbow joint may be caused by direct or indirect violence. If an adult falls on an outstretched arm and sustains a fracture, it is usually a fracture at the base of the radius (often a Colles); if a child, the fracture usually occurs near the elbow. Therefore, the rule can be laid down that a fracture of the elbow in a child is almost always due to indirect violence transmitted through the hand and forearm to the elbow with the arm hyperextended, while the same type of injury in an adult is usually due to violence applied directly to the elbow region." (Gilcreest (4))

RADIOGRAPHIC STUDIES

It is essential to take a radiograph of the normal limb. In children the radiograph is frequently misleading, hence Baetjer and Waters (1) emphasize "In injuries of the lower end of the humerus in young children care must be exercised in making a diagnosis of no fracture. We must bear in mind that a great portion of the joint is cartilaginous and that a fragment of cartilage may be broken off and yet not be demonstrable by the x ray. In such cases it has always been the custom of the writers to return a diagnosis stating that no fracture can be demonstrated."

PROPER TREATMENT OF FRACTURES OF ELBOW JOINT

In a previous article (2) I summarized, in general, the modern treatment of fractures which will of course apply likewise in this case. Some of the conclusions are as follows:

1. Proper attention should be paid to treatment of fractures, as better and quicker results are now expected.
2. Early reduction is absolutely necessary.
3. Reduction should be performed with full consideration of muscle pull and not according to the traditional custom of pulling by direct extension.
4. When possible, the fracture should be reduced under the fluoroscope.
5. Restoration of anatomical position should be the aim, but partial lateral displacement or impaction without alteration of the axis of the limb is allowed.
6. Prolonged immobilization is harmful.
7. Massage should be commenced very early, about the third or fifth day; but it must be administered very carefully and gently in the hands of an experienced masseur.
8. Active exercises are preferable to passive. These should be commenced early, as they prevent stiffness and adhesions. They never cause pseudo arthrosis.
9. Passive exercises may be justified only at the end of the treatments to obtain full range of motion, but even these should be done gently.
10. A röntgenogram should be taken before and immediately after reduction, and at frequent intervals during the course of treatment. The patient should not be discharged without a final röntgen ray examination.

METHOD OF REDUCTION.

1. *Fracture immediately above the condyles.*—For all fractures of lower end of humerus we may quote Sir Robert Jones from his excellent book (6) as the language cannot be improved on.

"The best means of reduction—I would almost venture to say the only means of complete reduction—is a combination of complete flexion of the elbow with downward traction of the forearm. If the limb

is then bandaged in complete flexion, with the forearm supinated, i.e., the palm towards the shoulder—a good result in every case of simple uncomplicated fracture is practically assured. The tendon of the triceps muscle arranged like a strap round the back of the joint is a perfect splint. The coronoid process

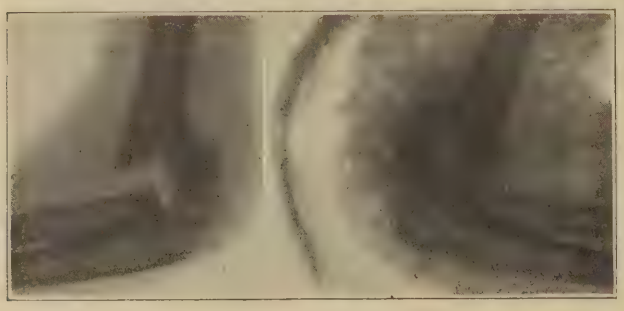

Fig. 4 Fig. 5

Fig. 4.—Case II, S. H. Position obtained after the operation; hand in cast.

Fig. 5.—Case II, S. H. Six weeks later showing the union of the lower fragment and the prominence of the upper fragment. A. Anteroposterior view. B. Lateral view.

of the ulna tucked into the coronoid fossa steadies the lower fragment in front. No excessive callus can form in front to form an obstruction, because there is no room for it."

2. *Fracture of condyles involving the joint.*—"Reduction: The surgeon takes the lower end of the humerus in one hand with the thumb above one condyle and forefinger above the other—the elbow is thus in his hand. With his other hand he pulls the forearm in the line of the limb and gently but resolutely brings the elbow into full flexion with the forearm in full supination. While performing this movement the hand grasping the condyles feels any movement that takes place among the fragments, and by following that movement by gently grasping them they can usually be coaxed into better apposition. Flexion must be resolute so that any fragment displaced forward is pushed aside out of the way. If any fragment is lodged in front of the joint and blocks full flexion, it should be replaced and fixed by operation should manipulation fail." (6)

It is absolutely necessary to look out for the preservation of the carrying angle[1], therefore there should be slight abduction of the forearm particularly in cases of fractures of the internal condyle. In some cases where it is hard to obtain good position by traction on the flexed elbow I have exerted at first traction on the forearm with the elbow fully extended and supinated. The joint is manipulated at the same time and the displacement corrected. The elbow is then slowly and firmly flexed to an acute angle. The hand of the surgeon must be kept on the lower fragment of the humerus.

DIRECT REDUCTION

If proper facilities are available the fracture of course should be reduced under the fluoroscope. Eliason says: "The anteroposterior deformity is first reduced, the forearm flexed and the fluoroscope used with the arm and forearm abducted and in the plane of the supine patient's body. If this view is good, the limb is brought to the patient's side with the hand on the shoulder of the injured side and a look taken. Should there be lateral displacement the forearm is extended to about a right angle and the lateral deformity corrected" (3). Retentive apparatus is then applied. The methods of reduction by complete flexion or extension can of course be carried out very easily under the fluoroscope. "In fractures of the elbow joint where sepsis is present, it is often useful to put the supinated arm in full extension and fixation in a Thomas arm splint until the acute sepsis has been controlled or the fracture has begun to show signs of union. Nearly always, even finely comminuted fractures, in which we know a large part of the fragments are absolutely detached, if not infected, unite very rapidly, forming a large callus. The arm should then be gradually flexed, maintaining the supination. It is unwise to leave the arm extended more than one month for fear of bony ankylosis in this awkward position." (4)

RECAPITULATION OF REDUCTION OF FRACTURES OF LOWER END OF HUMERUS

1. Supracondylar fracture of the elbow downward traction of the flexed forearm; if not successful may try elbow in hyperextension.

2. T fracture into the joint—traction on the forearm in the line of the limb and then gently bringing the elbow into full flexion with the forearm in full supination.

3. In fracture of the internal condyle or even the supracondylar there should be slight abduction of the forearm to preserve the carrying angle.

Fractures of neck of radius.—These are put up in full flexion with the forearm supinated. If it is dislocated as well as broken off it usually impedes free flexion and may have to be removed. Many surgeons therefore resort to early operation. The lump of callus which forms round the broken end of the neck forms an excellent head under the molding forces of the ordinary movements of the part. One should, however, at first try to reduce and immobilize it before resorting to an open operation.

Fracture of the olecranon process.—If there is no displacement of the upper fragment, the elbow is put in full extension. It is advisable to put on a firm

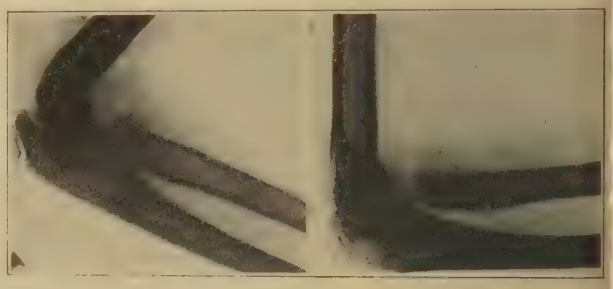

Fig. 6 Fig. 7

Fig. 6.—Case III, V. C. Fracture of head of radius. March 23, 1923, before treatment.

Fig. 7.—Case III, V. C. Showing good position of head of radius, June 2, 1923, when patient was discharged.

pad from felt above the olecranon to stop the triceps from moving it upward. A plaster cast from the axilla to palm is applied. If there is a displacement of the upper fragment—it is a clear indication that the biceps has already contracted and pulled the fragment upward. One may try at first to replace the

[1]The carrying angle is the term applied to the angle made by the forearm in its attachment to the arm. In male this is about ten degrees, while in females it is between fifteen and twenty degrees.

fragment and then to immobilize it but it is doubtful whether it can be done. It usually requires an open operation and the fragments fixed into position; kangaroo tendon will often suffice.

PROPER RETENTIVE APPARATUS

Adhesive plaster can be used or as in some cases a Thomas arm splint or Jones humerus splint can be used, an aluminum internal angular splint or a bandage and sling. I personally am a strong advocator of application of a circular cast. I believe that in the hands of the experienced it makes the best splint. It holds the fragments well, it prevents the swelling and is the most comfortable apparatus. It can certainly be applied in such a way as not to interfere with the circulation. It can also be split later into two halves when the time for massage and active motion comes; the upper or anterior part be thrown away while the posterior one used as a splint. The plaster extends from fingers to the axilla. Jones (6) warns against the right angular splint as follows: "A warning must be given against the old right-angled internal splint for the elbow. Satisfactory use of this splint is extremely difficult. Distortions about the elbow are frequently produced by its use, and it is therefore to be regarded as a dangerous device.

"First, it provides no easy means of preventing backward displacement of the lower fragment. Second, it leaves room for the formation of excessive callus in front of the elbow. Third, it is very easy with this splint to press unduly on the internal condyle, tilting the lower fragment outwards and so throwing the joint out of true alignment, and this condition may not be noticed till the patient begins to use his arm—it is therefore an insidious danger. We may therefore say that the internal rightangled splint for treatment of elbow-joint injuries is to be regarded as absolutely obsolete." I have therefore abandoned the anterior angular splint.

Some still cling to the use of adhesive plaster as a retentive means. A word of warning should be used. The adhesive plaster must not be put as a circular band around the upper end of the acutely flexed elbow, as there is produced a sharp constriction of the flesh by the upper edge of the strap. The strap must be laid flat on the skin. The ends must therefore meet at an angle and pinned as well as stuck together.

AFTERTREATMENTS

As mentioned before, the good results can be obtained only if the aftertreatments are properly carried out. It must be begun early, best on the fifth day. If one is too cautious he may postpone it three days longer. Active motion should be begun at the same time or at least on the seventh day. It is carried out as follows: The dressing is removed, the masseur carefully holds with one hand the fractured bones and orders the patient to drop the elbow a few degrees, then to be flexed to the former position. This is repeated twice. The following day the voluntary range of motion is increased. In about a week one usually finds that the patient can reach to a straight angle; the splint can then be changed for one of a right angle and used part of the time as a retentive apparatus. The first splint which forced the elbow into flexed position is also kept on for part of the day. The cast can be discarded at the end of three weeks and a sling substituted.

MOVEMENT

During the process of active motion, should the elbow stiffen so that the patient can not obtain the initial degree of flexion, all movement should be discontinued. It indicates that the repair is not far enough advanced to allow movement without damaging the site of repair. The arm should again be put in complete flexion for one week, then active motion resumed.

Passive movement should be commenced in the fourth week and should consist of only one movement in each direction (pronation, supination, flexion, and partial extension) and then replaced in the cast. The fracture should be protected by the surgeon's other hand while the passive motion is carried out. If the passive motion produces much pain, it should not be repeated for several days.

COMPLICATION OR RESULTING DEFORMITIES

1. *Volkman's contraction.*—The possibility of this complication in fractures of the elbow is rather frequent in inexperienced hands and should always be kept in mind, particularly in children. It can be prevented, first, by having no pad in the elbow; second, having no constricting band or bandage about the joint, and third, seeing that the angle of flexion is not too extreme.

2. *Traumatic myositis ossificans.*—This is very common in dislocations but may also be found in fractures.

3. *Ulna nerve or median nerve injury.*—While this injury is usually due to involvement in the callus, it may occur many years later, and may require neurolysis to free the nerve. If severed at the time of fracture, of course it should be sutured. Discussion of the treatment of this complication is out of the scope of this paper.

4. *Nonunion.*—Discussion of nonunion is out of the sphere of this paper and need not be discussed, as the same rule applies here as in all fractures.

5. *Fibrous union.*—In some fractures, as in either condyle, or olecranon process or epicondyle or head of radius, fibrous union is not so dangerous and patient can have a useful limb. Where the fibrous union weakens the bone operative procedure may have to be considered.

6. *Malunion.*—In malunion the flexion is often limited by a piece of bone in front of the elbow, usually arising from the lower end of the upper fragment. In such cases we can easily remove that by an open operation. Where there is a cubitus valgus increase of carrying angle (as a result of fracture of external condyle) or a traumatic cubitus varus (commonly called gunstock deformity)—diminished carrying angle (due to a fracture of internal condyle or intracondyloid fracture of the humerus)—an osteotomy of the humerus on the desired side will correct them.

7. *Ankylosis of the elbow joint.*—Due to proximity of the joint, fibrous or bony ankylosis of the elbow joint may result.

Where there is stiffness of the elbow joint due to adhesions, the question of breaking up the adhe-

sions arises. Jones and Lovett (7) summarize that as follows: "Manipulation of the elbow joint requires more care and judgment than does that of the shoulder and should always be gentle. If the adhesions are light and there is no injury to the joint, it is only necessary to flex and extend completely with the arm first in complete pronation and again in complete supination. In this way adhesions of the radioulnar articulation are simultaneously overcome. If adhesions, however, are firm and limitation of movement is marked, as is often the case in old fractures, the elbow should be gently extended in supination and then flexed to the point of safety and fixed in this position by a sling for a few days. It should then be extended and fixed in extension for no longer than two days. The arm should then be freed, and active and gentle passive movements practised, the fracture, if present, being protected from strain by splints. It may be necessary to repeat the movement in a few days.

Where the stiffness of the joints is due to bony ankylosis, an arthroplasty is advisable.

REPORT OF A FEW INTERESTING CASES

In illustrating some of the principles explained above, I shall not take up the ordinary cases where the result was perfect function in a short time, as every surgeon can report many such cases. I will take up only difficult ones, show the complications, and then point out the final result.

Case I.—G. S., male, aged six and a half years, came to me on May 25, 1923, referred by Dr. Goodside. Four days before he had sustained a dicondylar fracture of the left elbow with displacement of the lower fragment backward. (Figs. 1 and 2.) The elbow was markedly swollen and painful. Reduction was performed and a plaster cast applied. Aftertreatments were begun in three days. There were marked adhesions interfering with the free motion of the joint so that about six months of active and passive motion were necessary before the patient obtained good function. There was, however, ten degrees limitation to complete flexion, while extension was perfect.

Comment: The adhesions in this case were probably due to the delay in the reduction giving a chance meanwhile for the extravasated blood and torn muscles to form adhesions.

Case II.—S. H., male, aged eleven, was referred by Dr. Friedland on July 11, 1923. The patient had a T fracture of the right elbow joint (thirteen days' duration). He had been treated before with a right angular splint, but the x ray showed poor alignment and twisting of the outer condyle and also some tearing of the periosteum on the posterior aspect of the humerus. (Figs. 3, 4 and 5.) The elbow joint was markedly swollen obliterating all landmarks and one could feel the lose fragments.

Under anesthesia and the fluoroscope the forearm was extended, then by slow traction the fragments were dislodged and manipulated and the forearm gradually flexed. The elbow was brought to an angle of 70° with the forearm supinated. A plaster cast was applied. The x ray showed much better position. Aftertreatments were instituted five days later. It was some time before the motion returned but the final result was very good.

Comment: In a complicated fracture like that, one could not expect a good result especially when it had to be reduced thirteen days after the occurrence. Under the fluoroscope, however, the fracture was reduced and by putting the arm in acute flexion, perfect function resulted.

Case III.—V. C., female, aged twelve, was referred by Dr. Messemer. There was fracture of the head of the radius of one day's duration. (Figs. 6, 7.) The forearm was put in acute flexion, and baking and massage instituted five days later. A perfect result was obtained in three months.

Comment: Judging by the size of the fragment one could expect that an open operation to remove the head would be absolutely necessary. However, the acute flexion placed the head in good position and thus a good result followed.

CONCLUSIONS

1. Fractures in the region of the elbow joint are serious on account of disability that may follow improper treatment of this important joint.
2. These fractures should be treated properly from the very beginning as interference with function usually results.
3. They should all be treated with the elbow fully flexed and the forearm supinated, with the single exception of fracture of the olecranon, which requires full extension.
4. Immobilization can be obtained by means of adhesive plaster, bandage and a sling, an aluminum internal angular splint, Thomas arm splint, Jones humerus splint and plaster of Paris cast.
5. The aftertreatments should be carefully and intelligently carried out and not left entirely to an ignorant masseuse or to the judgment of the parents.
6. Massage, baking, and active exercises can be begun in the first week.
7. Adhesions present should be broken up with great care.

I wish to thank the surgeons of Fordham Hospital for their kind co-operation in this work.

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Practical Points in the Diagnosis and Treatment of Fractures*

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A fracture may be defined as a solution of continuity of bone and can be divided into two general groups: fractures of the diaphyses and fractures of the epiphyses.

In diaphyseal fractures the false point of motion is more evident than in epiphyseal fractures; there is a tendency in the former to overriding and shortening, which is most marked in the case of single bone regions, i. e., humerus and femur. In epiphyseal fractures the articulations are frequently involved.

The causes may be divided into those which predispose the bone to the strain which can result in solution of its continuity, and exciting causes are those producing the actual break.

1. Predisposing causes are functional, external influences, pathological, intrauterine or obstetrical.

2. Exciting causes are muscular action and external violence, either direct or indirect.

The bones as the rigid framework of the body must take up the stresses and strain transmitted by the muscles and ligaments which come in ordinary exposure and daily work of life. The structure of bone, though being normally adopted to these necessities, will give way when its limit of elasticity is passed, and fracture will result. Pathological invasions affecting the human skeleton, or part of the skeleton, may reduce the normal elasticity to a minimum, and result in loss of resistance of the bone to the slightest strain.

In discussing external influences as a predisposing factor in fractures, Speed gives a very interesting summary, supported by statistics taken from the Cook County Hospital of Chicago, thus: "Other predisposing causes arise from outside influences incident to occupation, such as, sex, age, season, and exposures of life. Occupation and sex are closely intermingled, because males as a rule perform the hardest labor and are occupied in more dangerous work.

In a consecutive series of 10,702 fractures studied at the Cook County Hospital, there were 7,954 closed fractures, and 399 open fractures in males, and 1,154 closed and twenty-seven open fractures in females. The remainder were in children."

INTERPRETATION OF SYMPTOMS OF FRACTURE

In order to properly interpret the various symptoms and signs which are usually associated with the presence of a fracture, one must bear in mind that, though a fracture is defined as a "solution of continuity of the bone," it is usually accompanied in the majority of instances by an injury to the soft tissues as well, which is of more importance than the fracture of the bone itself, and as Estes points out correctly that "in no instance, except perhaps, in the rare cases of socalled groenstick fracture, may the soft tissues be forgotten or neglected in treating the case."

The five cardinal diagnostic points which are laid down in every textbook are: Pain, loss of function, deformity, false point of motion, and crepitus.

One must bear in mind that symptoms are subjective, while signs are objective. The subjective reactions which we term symptoms depend a good deal upon the age, sex, social status and temperament of the sufferer, and should therefore be accepted with a critical mien.

Hence pain which is looked upon as one of the most important, if not the most important in the diagnosis of fractures, must be carefully scrutinized before full reliance can be placed on it. Loss of function may be due to the injury or may also be due to hysteria, or exaggerated responsive reflexes causing suspension of normal function of the limb. As for deformity and false mobility, the physician must ascertain whether or not there was any presence of a deformity prior to the injury. Crepitus is of great importance, but one must differentiate the grating of a blood clot accumulating around the injured part from real bony crepitus. In marked overlapping of fragments, crepitus is usually not obtainable. Nor in marked separation of fragments, as in the patello and olecranon. It is also absent in impacted fractures and in incomplete fractures.

FREQUENCY OF FRACTURES AS TO LOCATION.

A radiological analysis of 1,226 cases made by C. R. Scott as to location gave the following results:

	Per cent		*Per cent*
Skull	7.01	Pelvis	2.93
Vertebræ	2.11	Femur	10.44
Humerus	4.89	Fibula	13.53
Radius	8.80	Tibia	14.92
Clavicle	3.26	Tarsals	3.18
Scapula	1.38	Metatarsals	3.18
Ulna	7.01	Phalanges	2.28
Carpals	0.97	Patella	0.89

FRACTURES FREQUENTLY OVERLOOKED

There are three locations in the body, which are exposed to fractures quite frequently, and which to my amazement are overlooked in ninety per cent. of cases, namely: fractures of the neck of the femur, fractures of the vertebræ and appendages, and fractures of the os calcis.

It is indeed amusing, though tragic, to see how many diagnoses are put down for these conditions. Fractures of the neck of the femur are usually diagnosed as dislocations of the head of the femur, sprain of the hip is another favorite diagnosis with many. Rheumatism is another diagnostic term to cover the physician's ignorance.

It is my experience that ninety per cent. of fractures at the neck of the femur are not diagnosed early enough to give the orthopedic surgeon the opportunity to institute immediate treatment, which is, after all, the only way by which a perfect result can be anticipated.

Year after year hours are being spent at the state and national medical and surgical gatherings, in discussing fractures of the neck of the femur, with particular emphasis laid upon the various methods

*Paper read before the Clinical Society of the West Side Hospital Dispensary, New York, May 21, 1924.

of treatment with new devices and new apparatus, as well as newer operative procedures. If instead of showing new devices and new operations we should rather spend a little more time in telling the general practitioner, who is usually the first to see the patient, how to diagnose the condition, a real benefit

Fig. 1.—Right lower extremity illustrates position of limb in fracture of the neck of the femur.

would be conferred upon humanity by the orthopedist, because more cases would be diagnosed early enough for the various methods of conservative treatment to be effective.

Now, what are the pathognomonic signs in fractures of the neck of the femur?

A person who prior to a fall walked quite straight and without assistance, soon after a fall finds himself unable to get up without assistance. When the physician arrives he finds the patient in bed. The lower limb which is supposed to have sustained an injury is rotated outward, with the inner border of the foot pointing upward while the outer border of the foot resting on the mattress and pointing downward. When the patient is asked to lift the foot off the bed, he attempts to but finds it impossible. The first thing to think of in such a case is the presence of a fracture of the neck of the femur, provided, however, that palpation reveals no solution of continuity in the shaft of either the femur or lower down. Measurement from the anterior superior spinous process of the ilium to the internal malleolus of the same side, and the same measurement repeated on the other side, will give the indication as to the real shortening, if present. Usually one may find very little shortening in the early stage.

FRACTURES AT THE REGION OF THE VERTEBRÆ

Most of the physicians associate fractures in the region of the spinal column with severe symptomatic manifestations, such as, paralysis and disturbances of the nervous system, which in their minds is so frequent a consequence of the injury that it never occurs to them to think of such injury with seemingly slight symptoms and mild signs.

I have seen some cases with fractures of the bodies of the vertebræ with symptoms and signs so mild that only a thorough examination and proper x ray revealed the true condition.

Many cases of backache, if thoroughly gone into and properly x rayed, will reveal the presence of a fracture of the vertebræ or some part of its appendages as the starting cause, having been overlooked by the family physician, as well as by the consulting surgeon.

When a patient gives a history of a sudden onset of pain in the back, which persists in spite of rest for a few days, traced to either a sudden wrench or even a sudden turn or fall, and accompanied by a spasm of the muscles of a small area of the spine, with presence of local tenderness, the physician will never make a mistake in diagnosing the case as a tentative fracture. He may then investigate further, to either corroborate or eliminate the above diagnosis.

It is indeed humiliating to have treated a patient for months or years for lumbago, with massage, baking, electricity and what not, and then after the patient has become tired of the ineffectual results, the physician, as a last resort, suggests a consultant. The examination will then reveal the presence of a fracture, which should have been given a chance to unite instead of being interfered with.

The third and last fracture which I intend to deal with in this paper is one, which is quite fre-

Fig. 2.—Shows the test for the ability of the patient to lift the foot and limb off the table. This is a very valuable test.

quent and is the least recognized, namely, fractures of the os calcis.

Speed states that of his record of 10,702 cases, he found ninety-two instances of fracture of the os calcis, or 0.86 per cent. He also credits Brind with the following statistics:

	Fracture	*Calcaneus*	*Per cent*
Billroth	663	7	1.1
Tietze	17000	206	1.2
Drenke	1845	29	1.3
Lemmen	3554	65	1.8
Brind	3460	63	1.82

Speed divides them into four varieties: avulsion

fractures, isolated fractures of the sustentaculum tali, isolated fractures of the trochlear process (peroneal tubercle), and compression fracture of the whole bone.

The compression fracture composes at least ninety

Fig. 4.—E. R. In spite of extensive fracture of fifth and sixth cervical vertebral bodies, patient attends to her daily occupation, walks around without any hindrance, and seems to possess fairly good health.

per cent. of all calcanous fractures. They are more common in men than women. All the cases of compression fracture that I have seen were in men, and all of them were produced by practically the same cause, falling from a height and landing on the plantar surface of the feet. All of them have had the same pathognomonic signs, sudden appearance of a flat foot after the injury, with inability to adduct the foot, and tenderness along the middle part of the os calcis, and swelling of the ankle, as well as at the plantar surface of the foot posteriorly.

It is, therefore, worth while remembering that a sudden appearance of a flat foot in a patient after a fall from a height and landing on the feet, which is accompanied by swelling and tenderness, the first thought should be fracture of the os calsis. This possibility should be excluded before any other diagnosis is entertained (Fig. 6a).

EPIPHYSEAL INJURIES

Kirmison points out an interesting physiological fact with reference to the epiphyseal cartilages, i. e., "It is very important to note," says he, "that the different epiphyses do not all possess the same physiological value."

Of the two epiphyseal cartilages in a long bone, one always plays a much greater part than the other in the development of the length of the bone. This epiphysis is termed the fertile cartilage. The nature of these fertile cartilages varies in the superior and in the inferior extremity. In the upper extremity the fertile epiphyseal cartilages are the superior extremity of the humerus, and the inferior extremities of the ulna and the radius. In the lower limb, on the contrary, the epiphyseal cartilages of the lower end of the femur and the upper end of the tibia causes increase in the length of the limb.

One must bear in mind that epiphyseal injuries in regions where the epiphyseal cartilage is fertile, though the injury at the time may seem slight and insignificant, may have a farreaching effect in the future. This is on account of early ossification of the part and shortening of the limb through cessation of growth, if the injury happens to affect the cartilage of one bone region. If the injury has taken place in one bone of a two bone region, such as the forearm, the cessation of growth taking place in one bone while the other keeps on growing normally, the adjacent part depending upon the two bones for normal articulation will eventually suffer from deviation and incomplete alignment. The family of the patient should, therefore, be told of such possible outcome, in order to avoid possible blame and legal complications (Figs. 6 and 7).

OTHER CAUSES FOR SHORTENING AND LENGTHENING

Shortening of a limb following fractures may be caused by: Overriding of the fragments and union taking place in that position; destruction of part of the bone as a result of infection at the point of fracture, or as a result of operative interference in nonunion, necessitating the removal of eburnated

Fig. 5.—Mrs. P. Injured in automobile accident. The surgeon treating the case failed to recognize the complete fractures and separation of the fourth transverse processes of the upper four lumbar processes of the right side.

ends, so as to be able to approximate the freshened fragments.

There are other causes which must be thought of, and my experience with them convinced me that they are not rare, e. g., deformities produced by the alignment. A person has sustained a fracture in a straight leg, and when the surgeon sets the bones he puts them in an attitude of a slight inward bowing. After the fractured bones are properly united, the patient will have a shorter limb on the injured side, for no other reason but for the difference of the directions of the bones of the two legs (Fig. 8). If, on the other hand, the patient, prior to the sustained fracture has had an inward bowing of the two legs and while the surgeon was setting the fractured bones, he failed to take cognizance of that fact, and placed the fractured leg in straight position. After the union, the patient will be the unhappy possessor

Fig. 6.—M. R. Fracture of left os calcis with marked flat foot, treated for sprained ankle for two months. Right foot for comparison.

of a longer limb as a result of the injury, which will be to him a greater inconvenience than if it were somewhat shorter. Lengthening of the fractured limb may also be due to irritation of the growth cartilage as an indirect cause of the fall.

This may be of great legal importance, especially in children. I have recently been called to court to give testimony in a case where a boy of seven, as a result of a fracture of the left leg, had an inch lengthening of that limb. The surgeon who had charge of the case was at first of the opinion that the lengthening of the limb was due to an irritation of the growth cartilage, until a thorough study of both lower limbs by inspection, palpation and measurements, as well as by study of the x ray plates, showed me that before the accident the boy had internal bowing of both limbs due to early rickets, and that the lengthening of the left limb was brought about by the corrected attitude in which the fractured limb was placed and permitted to unite. It is needless to emphasize the necessity of studying and comparing both limbs for the presence of the slightest deviation from the normal. X ray should also be taken of both sides for comparison.

Many women have bow legs, and some have

Fig. 7.—Showing marked deviation of right foot and mishapen astragalus caused by traumatic epiphyseal disturbance of the fibia four years prior to the taking of the x ray. Left foot for comparison.

knockknees. Quite a number of women cannot fully extend their forearms under normal conditions.

In children shortening of a limb following a fracture, if not due to disturbances of the fertile cartilage, has the tendency to correct itself in time, especially in the lower extremity. This is due to the stimulus of walking on the growth cartilages of the shorter side to a greater extent. It is, therefore, to my mind, not a wise policy to replace the shortening by building up the shoe too soon.

RADIOGRAPHY

Inspection, palpation, measurement, at times auscultation, will help the surgeon make a diagnosis, and decide upon the mode of treatment. The x ray should always be taken after a complete examination and diagnosis has been made, and should be considered as an aid in diagnosis and not as the alpha and omega of diagnosis.

From a legal point of view, however, an x ray is indispensable, and any physician who treats a fracture case without an x ray to confirm his diagnosis, does so at his own risk, and will sooner or later have cause to regret it. In order that an x ray should be of real service in the diagnosis as well as in the determination of the mode of treatment, the following important points must be remembered:

1. The x ray must be taken by an expert.

2. The anteroposterior views as well as lateral views of the limb must be taken, in order to ascertain the amount and direction of displacement, if present.

3. The normal limb of the uninjured side must always be taken for comparison.

4. X rays are only shadows, and as such the angle at which the part is exposed to those rays will make a difference in the finding, especially in the spinal column.

5. Beware of artifacts which may resemble fractures.

6. In young people of the adolescent age one must be on the lookout for the growth cartilage and ossification centres, which may be taken for fractures (Fig. 9).

7. The readings and interpretation of the x ray negative should be done by the surgeon, aided by the radiologist, and not by the radiologist exclusively.

8. Plaster of Paris is permeable to the rays, and can therefore be applied to the fractured part soon after the injury, followed by the taking of the x ray as soon as the patient can be moved to a place where the x ray apparatus is available.

9. Stereoscopic views are to be preferred for the study of complete displacement or impactions.

In taking x rays of the spinal column one must remember the following facts: In the upper four cervical the anteroposterior view can only be taken with the patient's mouth open, and the rays directed through the oral region. In the cervical region a splendid lateral view can be obtained and should always be taken. In the lumbar region due to the natural lordosis the rays of the tube do not strike all the bodies of the vertebræ alike, and also the angle formed by the junction of the sacrum and last lumbar is another obstacle to the rays. Hence one must be careful in the reading of the x ray plates taken of that region.

As for the significance of the x ray, in the determination of end results, I fully agree with Speed, that:

"A röntgenogram taken to show end results or late in the course of a fracture has no value, except in those cases of failure of union to determine the amount of callus or to help decide on operation for malunion.

"The ultimate test of the fracture result is functional, and not anatomical. Anatomical reposition seldom occurs except in open operations, and not always then. If the patient secures a functional result without gross deformity, no röntgen examination is necessary, and slight displacements which are present in large majority of cases might be misinterpreted by unskilled observers, and lead to trouble. These displacements become effaced in the course of time when functional use readjusts the bone structure in accordance with Wolff's law."

TREATMENT OF FRACTURES

Prior to determining the mode of treatment to be instituted in any particular case, the following considerations must be taken into account:

Age, sex, occupation of the injured. Though proper alignment of the broken parts is the prerequisite in all ages, if sustained by either sex, and in people of all occupations, the method of approach differs in different ages as well as in different sexes.

The essential point to remember is the fact that in the treatment of fractures simple methods are preferable to cumbersome apparatus.

It may be a backward idea to some physicians who like to be up to date in their methods of treatment, but notwithstanding the recent lengthy articles appearing in the various medical publications, I have a weakness for the treatment of fractures with plaster of Paris immobilization. After all the results count and not the method.

If one is an adept at handling the plaster and can judge as to how to pad the limb prior to the application of the plaster bandages, the application of an immobilizing bandage soon after the injury will have the tendency to prevent swelling. If the reduction is found to be imperfect through the x ray, by splitting the plaster cast transversely and proper wedging, one can correct overriding of fragments, angular deformities, and faulty alignments. After the plaster bandages have been applied I seldom find it necessary to remove the cast in order to correct the alignment.

As for the fear of ankylosis of joints so immobil-

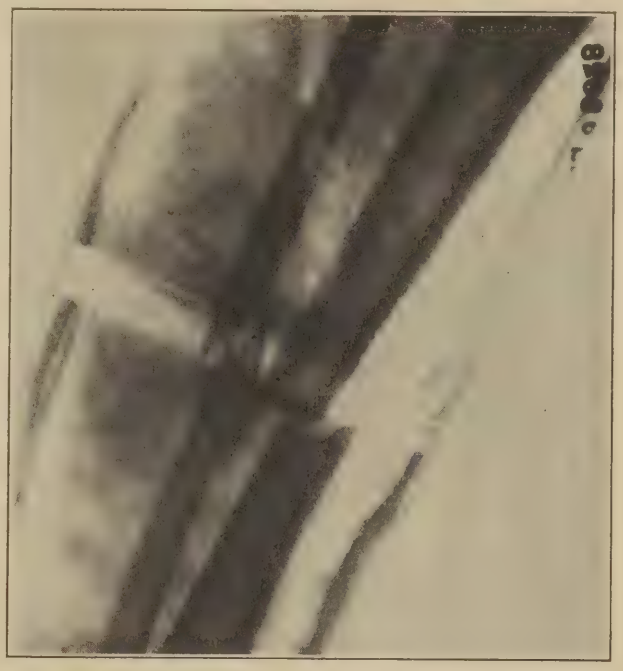

Fig. 10a.—J. H. Shows fracture of both bones of the left leg with marked displacement. The arrows show where the plaster boot has been cut through ready for wedging.

ized, except in those cases where the injury was so near a joint that it actually invaded the joint proper, I have never yet seen an ankylosis produced by the proper immobilization for a few weeks. On the contrary, I have seen poor results follow early mobilization of joints, abundance of callus formation due to early interference by too precipitate massage, baking, high frequency and ultraviolet, and other treatment.

Splints are good, if one knows how to adjust them. Plaster of Paris is excellent, if the physician knows how to apply it.

OPERATIVE INTERFERENCE IN FRACTURES

In passing I want to remark that if surgeons were more careful in their preoperative care of fractures there would be no need of operative interference in the large majority of cases.

I have seen many patients where their condition

was diagnosed as a permanent nonunion of fractured bone, and ordered to return to the hospital for operative interference. The condition improved under conservative and common sense methods without the need of the knife, and with the avoidance of mutilating corrections. Function stimulates the advent of blood to the affected region, with the invasion of a greater amount of calcium, resulting in callus formation and proper knitting of the bone fragments. Operative interference for correction of deviating deformities resulting from injuries to the epiphyseal cartilages deserves thorough and lengthy discussion.

As I stated, shortening of a limb in children may be temporary as the result of a slight overriding of the fragments, and usually corrects itself after a lapse of time by the stimulation of the growth cartilage in that region.

Hence operative interference in children and adolescents to correct such shortening is contraindicated. On the other hand, in shortening due to disturbance of the epiphyseal cartilage and involvement of the said cartilage, such shortening will increase as the years go by.

In discussing the psychological significance of injuries and diseases of lower extremities, in a previous communication, I have laid down certain rules by which I have been guided, and I believe that these rules deserve repetition.

1. Early and proper immobilization of the injured limb in order to eliminate the pain due to motion. Plaster of Paris bandages, properly applied, seem to serve the purpose best.

2. The encouragement of the patient to leave the bed as soon as practicable, and have him walk with the aid of crutches.

3. Removal of permanent support should be postponed until after the patient has been trained to walk without crutches, and has regained his selfconfidence. This prolonged immobilization has the effect of making the patient forget his previous incapacity and pain, and the regaining of his sense of security usually results in the ability of the patient to support himself on the injured limb without any difficulty, soon after the permanent removal of his immobilizing bandages.

4. In short, the necessity of bearing the old truism in mind that in dealing with ailments and injuries affecting human beings, we are dealing with beings in possession of emotions, impressions, and a nervous system in control of the impaired machine, and not, as a good many seem to think, a simple lifeless apparatus in need of repair.

There is, however, one class of cases in which immobilization of joints should be shunned, namely, in fractures sustained by patients subject to osteoarthritis of various joints.

SUMMARY

1. Fracture, though defined as a solution of continuity of bone, is most frequently accompanied by an injury to the soft tissues as well. The latter injury may at times be of even greater importance than the fracture of the bone itself.

2. In studying the symptoms and signs accompanying an injury which resemble a fracture, one must bear in mind that the symptoms being subjective depend a good deal upon the age, sex, social status and temperament of the injured, and hence need thorough scrutiny before reliance can be placed upon them. Even signs, though objective, may be misleading unless studied carefully and critically, before a diagnosis of fracture can be established, especially in obscure cases.

3. X rays should always be looked upon as corroborative and an aid in diagnosis, and not of exclusive diagnostic import.

4. In order that the x ray may be of real importance the interpretation should be done by both together, the surgeon in charge of the case, together with the radiologist.

5. One must become familiar with the appearance of the normal epiphyses at the various periods of adolescence in order to be able to determine whether or not any injury has taken place in that region. X raying the region of the uninjured side for comparison will certainly facilitate proper interpretation.

6. Not only in epiphyseal injuries but in fractures of the diaphyseal parts of bones, as well, is it essential that the injured side be x rayed as well as studied and observed for comparison, in order to detect the slightest deviation in form, shape or any other alteration which may have bearing upon the ultimate results.

7. The most important thing in fractures is restoration of function and if function is restored the x ray appearance, though disappointing, should be discounted for the best interest of the patient, and the physician as well.

8. Fractures of the neck of the femur, spinal column and os calcis, though of fairly frequent occurrence, are very often overlooked, resulting in permanent disability to the one so injured. It is, therefore, of paramount importance to bear symptoms and signs as well as the frequency of those injuries in mind, so that the physician is in a position to make an early diagnosis.

9. Epiphyseal injuries in children or adolescents, especially when the injury involves fertile cartilages, though seemingly slight and insignificant, may in years to come produce shortening of the limb as well as deviating deformities due to early ossification of the injured epiphysis. It is therefore essential that the family of the child so injured be informed of such possibility, and be asked to return the patient from time to time for observation.

10. Shortening of a limb in children caused by healing of a fracture of the long bones with a light overriding, provided the fertile cartilage is not disturbed will, if left to its own resources, in the majority of cases make up the shortening, especially in the lower extremity. The walking seems to stimulate the growth cartilage of the shorter limb to greater activity, and sooner or later both limbs will be of equal length. It is, therefore, a wise policy to encourage such stimulation by withholding the building up of the shoe on the shortened side for a while and watch the outcome.

The treatment of fractures and its outcome depend upon the man behind the method, and not upon any particular method of treatment, and any method which can restore function and give the patient the possibility to return to his usual occupation without delay, is the right method to be pursued.

498 West End Avenue.

Symposium on Gynecology and Obstetrics

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, NOVEMBER 19, 1924

Present Status of Treatment of Fibroid Tumors of the Uterus

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New York

In the treatment of fibroid tumors of the uterus we have to deal with a disease of quite frequent occurrence. Ellice McDonald in 175 miscellaneous autopsies held upon women, found that in those over twenty years old about one in every seven, or about fourteen per cent., had fibromyomata.

The fibromyoma, while essentially a benign tumor, possesses a strong latent power for harm. The weakening hemorrhages, the dangerous pressure effects, the tendency toward malignancy, the frequent occurrence during the childbearing period and its sterilizing effect, all unite in making its treatment one of the most important problems with which the physician has to deal in diseases of women. No definite rule can be formulated, since each case must be studied and treated according to the problems which it presents.

The histogenesis of fibromyoma is not fully understood. The latest investigation of the subject leads us to believe that the tumor is formed from the muscular coat of small arterioles. The true fibromyoma is a mesoblastic tumor and may undergo sarcomatous change, since sarcoma itself is a connective tissue growth and any carcinoma involving fibromyoma is necessarily heterogenic in its origin.

The adenofibromyomata have in their structure the epithelial cells of the glandular element and may undergo carcinomatous change without involvement from other sources. Either form of tumor may possibly become carcinomatous through metastasis from growths in other parts of the body. Myomatous tumors sometimes involve the whole uterus in a uniform hypertrophy of the myometrium.

The true fibromyoma possesses no histological unit but grows around a centre in interwoven fibres of nonstriated muscle and fibrous tissue, its density being determined by the excess of one or the other. As to why some tumors grow with greater rapidity and others more slowly we have no knowledge. As to the actual cause of their growth, we are still in the dark.

Until recent years the question of their treatment resolved itself into whether operation could be performed or not. If operation, whether total eradication by hysterectomy or removal of the tumors themselves by myomectomy, this depending largely upon the size of the tumor, the age and the general condition of the patient and the question of childbearing.

Recently another principle of treatment has come into use which adds an important resource beside operation, that is, the use of the x ray and radium.

For the purpose of treatment we may include three types under one heading, because we cannot usually make a differential diagnosis between these types of sufficient accuracy to segregate them, namely, fibromyomata, adenofibromyomata, and myomata of the uterus. With the most modern method of treatment with x ray and radium, sterilization, through their operation upon the ovaries, may be effected in one treatment. Through the action of these agents there is no doubt that most of the tumors will shrink and bleeding will cease.

The use of x ray and radium is not advised where inflammatory conditions in the pelvis exist or where there is a pedunculated fibroid or a submucous fibroid polypus. In the first instance there is a serious danger of causing fresh inflammation, and in the other instances there is danger of producing gangrene in the tumors.

The incidence of malignancy in these tumors at the time of operation has been placed by various authorities at from two to ten per cent. If we average this and say that in six per cent. of the cases malignancy exists we would reduce the treatment in those cases to that of malignancy of the uterus by the x ray and radium, and now the question of importance immediately presents itself, will the x ray or radium cure malignant disease of the uterus? If not, six per cent. of our cases may have their symptoms masked and reduction in the size of the tumor and an apparent cure only later on to die of malignant disease. It would therefore seem that if these tumors could be treated early when they were still small and checked or reduced in their growth that we would have an ideal method, without danger, in dealing with them, but in order to do this these patients would be sterilized through the treatment and many patients with fibromyoma may and do bear children. Therefore, it would not seem advisable from a sociological point of view to treat the cases at the earliest possible

moment with the gamma ray. It also often happens that we do not see or recognize these tumors until they have begun to cause serious symptoms.

Four patients whom I have seen consulted me on account of total inability to pass urine through pressure upon the urethra. Other patients whom I saw for the first time were in a cataclysmic condition through gangrene of the tumors. Such cases, of course, could only be relieved through immediate operation. On the other hand, in a considerable number of cases in which the patients were suffering from more or less severe symptoms, where systemic diseases, such as nephritis, diabetes, and tuberculosis, would make operation extremely dangerous, we would consider ourselves most fortunate to have an agent at hand which would enable us to give relief, in a large proportion of cases, without the danger of an operation.

The use of the x ray and radium in the treatment of these tumors will be considered in detail by Dr. William H. Meyer and Dr. George Stuart Willis in the two papers which follow.

As time for observation has become more extended, I find my views of treatment of fibroid tumors influenced by facts which time alone can demonstrate, namely, that the tendency toward malignancy is greater than I had thought in the earlier years of my practice. Second, that when myomectomy has been performed, the tendency for the formation of other tumors in this uterus is greater than I had expected it to be. This makes me feel that the radical field should be extended to a point beyond that which I formerly considered to be the proper one.

Assuming that the general health of the patient is good except for complications produced by the tumor, I would say that in women in whom childbearing has no important consideration and who are more than forty years of age, and having a fibroid which has begun to cause serious symptoms, a wise course of procedure would be to do a supravaginal hysterectomy, leaving one or both of the ovaries. All patients with pedunculated fibroids and submucous fibroids causing extensive hemorrhage should be operated upon. All patients with extensive tumors pressing upon important organs and causing serious functional disturbance should be operated upon. In pregnant women where the presence of a tumor seems a serious obstacle, fibromyomatous polypi, gangrenous fibroids, tumors of great size and rapid development, fibroid tumors associated with inflammatory disease of the tubes and ovaries, all tumors and fibroids in women past the menopause which have begun to bleed again, should be operated upon.

Now this leaves as suitable for treatment by the x ray and radium cases in which operative risks would be great on account of the systemic condition of the patient and cases of comparatively small tumors in women in whom the childbearing function has ceased to be a factor, and where the artificial induction of menopause is of no serious consequence.

The operation of myomectomy may be extensively applied in women of the childbearing age, where the childbearing function is of importance. It is, however, more dangerous than supravaginal hysterectomy. The mortality rate of the latter operation is less than one per cent. in the hands of many operators.

There are many methods of treatment which require little notice. The endocrine treatment of fibroid tumors is hardly worthy of mention. The methods of the present time which really offer relief are operation, radium and the x ray.

71 West Forty-ninth Street.

Radium Treatment of Fibroid Tumors of Uterus

GEORGE STUART WILLIS, M.D.

New York

The two main indications for radium in the treatment of fibroid tumors of the uterus are, first, small nonpedunculated fibroids in women approaching the menopause where hemorrhage is the chief complaint; second, when surgery is contraindicated because of some organic condition. The dose must be at least 1,200 milligram hours and we use a fifty milligram tube, screenage one and one half millimetre of silver, for twenty-four hours in the uterus. We also crossfire, using one hundred or two hundred milligrams of radium over the tumor mass. The skin area is divided into spaces about two inches square and each square is radiated for not more than one thousand milligram hours. The tube is placed routinely in these fibroid conditions one inch distance from the skin. This treatment may be repeated monthly until the tumor has disappeared. I present two case histories as follows:

Case I.—Mrs. B., married twenty-three years, no children. Menstruation had always been profuse. For the past two years she had been constantly spotting, with severe hemorrhages two or three times during the last year. Hemoglobin was 60, red cells 3,300,000. The patient had lost weight within the last six months. Except for a very high uric acid content her blood chemistry was normal. Urinary examination was negative. Upon examination, a fibroid about the size of an orange was felt posteriorly. The patient had seen a number of surgeons who suggested hysterectomy, but fearing an operation she was sent to me for radium treatment on June 3, 1922. At that time she received, externally, two thousand milligram hours, and one thousand milligram hours in the uterine cavity. On June 10th she received four hundred milligram hours intrauterine, and on September 30th, four hundred milligrams externally. On June 13, 1923, the tumor had apparently disappeared. She had never had any bleeding after the first month. Blood was normal and the woman was apparently well.

Case II.—J. W., aged fifty-two, was sent to me from the Harlem Hospital. Operation was refused because of an existing kidney lesion. Diagnosis was chronic interstitial nephritis. The tumor presenting completely filled the abdominal cavity crowding the liver upward, and it was impossible for the woman to walk. Pressure symptoms were such that the urine constantly dribbled and the woman was bedridden. The first treatment was given in June, 1920; one hundred milligrams of radium were introduced into the uterine cavity for twenty-four hours, externally four thousand milligram hours were given. The patient received about eight radium treatments after that.

The tumor diminished until it became about the size of a six months' pregnancy. After the second treatment the woman was able to work and had worked ever since. Her physical condition aside from the tumor mass was excellent.

116 East Fifty-third Street.

Röntgenotherapy in Myoma Uteri

WILLIAM H. MEYER, M.D.

New York

A summary of the cases of metrorrhagia, menorrhagia and fibromyoma uteri treated by x ray therapy at the Post-Graduate Hospital is here presented.

The series consists of forty cases treated during the past five years in which a sufficient time has elapsed to permit the drawing of justifiable conclusions. These forty cases can be divided into four groups depending upon the technic employed.

CLASSES OF CASES

1. In the first ten cases the old method of multiple area of crossfire through comparatively small portals of entry using from eight to sixteen areas at an eight inch focal distance with a supposed nine and one half inch gap and three and one half mm. of aluminum as a filter was employed. In these cases it was necessary to repeat the series at monthly intervals through the numerous portals of entry three or four times in succession before an amenorrhea was produced.

2. In the second series of ten cases the single factor altered was the thickness of aluminum filter which was practically doubled. By this method, still using multiple areas, crossfiring the number of series necessary to produce an amenorrhea was diminished. The majority were successful in one series.

3. No pronounced alteration in the method of treatment occurred until heavy filtration was employed, namely: In the third series of ten cases, the filter thickness was increased to the equivalent of about twelve mm. of aluminum. The focal distance doubled. In this series the portals of entry were materially increased in size and reduced in number, three to five large areas being the average; these administered on the same day if possible or all delivered in the minimum period of a week or ten days. (The voltage as measured by the spark-gap in all the foregoing remained practically the same.) In this series of cases we calculated to produce amenorrhea in one series and in this we were successful.

4. In the last series of cases the technic, which we are at present continuing, especially in heavy individuals, consists of using the same or larger portals of entry, with a further diminution in the number of areas, with increased filter thickness (employing three quarters mm. of copper) and an increase in the kilo voltage or penetration. By this method in the heaviest of cases we can practically guarantee the production of an amenorrhea in a single series. The number of portals of entry vary from one to four depending upon the heft of the patient and the size of the tumor.

In summarizing the results obtained in these cases, it is noted that there are no deaths and no untoward results of any kind ascribable to the use of the rays, though two cases are worthy of mention. In one, the only one of the series that came to operation, an apparently normal uterus was removed. (There were no adhesions.) Another in which a double mass was palpated, one proved to be a fibroid in which shrinkage later occurred. The other mass disappeared following an abortion of approximately three months, which was possibly due to the intense radiation.

The production of adhesive vaginitis, anemia, permanent gastrointestinal disturbances, adhesions and other changes ascribable to interference with the internal secretory functions of the ovary, are, as far as we are concerned, myths. In each instance the amenorrhea was complete and permanent. The minimal effect on tumor masses obtained was a shrinkage of at least fifty to seventy-five per cent. in size. In many instances previous palpable masses entirely disappeared.

Though we ourselves decide the need of further or continued treatment the clinical course of the cases is determined by the referring physician or checked in the department of gynecology.

Series	K.V. Peak	Focal dist. inches	Filter mm.	Area inches	Half Absorption in Al. mm.	Half Absorption in H_2O cm.	Amenorrhea No. area	Amenorrhea Series
1/	135+	8	3½ al.	2 to 3	5+	3½	8 to 16	2 to 3
2.	133+	8	6 al. or rotary	4 x 4	7+	5	6 to 12	1 to 2
3.	133+	16	13 al. or ½ cu.	6 x 6	12—	8—	3 to 6	1
4.	220—	16	¾ cu.	8 x 8	17+ Dose to skin, ¾ erythema	11+	1 to 4	1

The differences in effect of these four series of cases are best illustrated by the half absorption rate indicated in each.

Superiority of Radium Over Surgery in Cancer of the Uterus

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It is a noteworthy fact that, although there exists much diversity of opinion on the many phases of the cancer question—chiefly in regard to its etiological and therapeutic aspects—there seems to be complete accord in the belief that this malignant disease is gradually increasing; likewise there is concurrence of opinion on the question of mortality. The fact that cancer is constantly exacting a greater toll of human lives may justly be regarded with deep concern, especially at a time when scientific research and the various modes of treatment for this condition are claiming so much of our attention. Although educational campaigns which have been and are constantly being carried on for the enlightenment of the laity may, to a certain extent, account for the apparent increase of malignancy—in so far as they lead to early diagnosis—coupled with actual strides in diagnostic methods, should not this greater incidence at least be counterbalanced by the application of therapeutic methods now at our command?

Unfortunately, there is no means of gathering and summarizing authentic data which would indicate the extent of the advances, if any, made in regard to cures, amelioration, or temporary relief effected, so that resort must be made to statistics in connection with mortality rates; and these must in turn be considered in proportion to the occurrence of the condition. It is, therefore, not with any measure of encouragement that the following facts are presented.

Confining our attention to the United States, we find, according to statistics compiled by the Bureau of Census, that there has been an increase in the incidence of cancer from sixty-three to the hundred thousand persons in the year 1900, to 76.2 in 1910, and, again, to eighty-six in 1921. Further, that the number of deaths in 1921 from cancer and other malignant tumors numbered 76,274, corresponding to a crude rate of eighty-six persons to the hundred thousand, against 83.4 in 1920, and 80.5 in the year 1919; and that the death rate for the year 1921 shows an increase of 36.5 per cent. over that of 1900.

That cancer of the uterus is responsible for the great majority of fatalities due to malignancy in the female genital organs is indicated by a compilation of statistics from the same source, for the year 1921: Of 11,181 deaths due to carcinoma of the female genital organs during 1921, 10,085 were attributed to uterine carcinoma—truly an appalling ratio!

In our own state of Indiana, these same reports show that death from all causes, in 1921, aggregated 35,220, of which 2,735 persons died from cancer, 426 cases of this malignancy being attributed to cancer of the female genital organs.

Inasmuch as educational publicity is furthering the cause of early diagnosis in regard to carcinoma, it will not, however, fully accomplish its purpose until women comprehend the necessity of an examination every six months, and until every physician is brought to a realization of the fact that examination of the female patient is not complete unless a thorough vaginal examination is made. When these conditions prevail, they will go a long way toward keeping a great percentage of patients out of the incurable class, by making feasible the institution of proper treatment during the incipient stage of the disease.

Although it is universally conceded that the earlier the diagnosis the more amenable is the malignancy to treatment, still the figures quoted above point to an increase in the mortality rate, notwithstanding the fact that a larger number of cases constantly are being diagnosed at an earlier stage in the process. In lieu of these facts, a realization of our shortcomings seems essential—the most plausible explanation of failure to prevent so tremendous a sacrifice of human lives appearing to me to be a hesitation on the part of some of our surgeons to relinquish an old therapeutic method in cases where a newer one has proved to be of greater value.

With the question of treatment in cases of uterine carcinoma we enter the province of the examining physician, for it is he who controls, in no small degree, the destiny of the patient. If habit is the guiding factor, the patient is most apt to be sent by him to a surgeon who, in turn, decides whether the case is operable or inoperable. If, however, the examiner is alive to more recent therapeutic achievements, the value of radium in the treatment of this condition will be uppermost in his mind; the surgical procedure will be reserved for cases in which radium is contraindicated. In view of these later developments, therefore, cases should no longer be designated as operable or inoperable, the terms curable and incurable having proved more fitting.

The value of radium in the treatment of cancer of the uterus first gained recognition through the excellent results attained in cases which were considered as not amenable to surgery. In many of these instances radium proved so effective that cures were attained where merely amelioration was anticipated. These were the socalled inoperable cases, which were relegated to the province of radium therapy as a last resort. Although we had hoped, in these instances, merely to be able to bring relief, we had obtained results achieved by no other method of therapy; and the relief thus afforded amply rewarded our efforts. Indeed, some of the cases which have been referred to us as incurable by competent surgeons are well today, and have been so for years. In this connection, Ewing, in a recent report of the Memorial Hospital, New York (1), states that "the unexpected success of radium treatment of cervical carcinoma seems attributable to two main factors: 1. The cervical tissues form a resistant filter so that relatively large doses of radium can be inserted in the canal and in the tumor tissues. 2. The majority of cervical carcinomas resemble the basal cell tumors and are more susceptible to radiation than squamous carcinoma. On the other hand, the inaccessibility of cervical carcinoma will always render it very difficult

to extirpate this organ without disseminating tumor cells. These facts will probably assert themselves sooner or later in the final decision as to the choice of treatment of cancer of the cervix."

One of the most encouraging indications of progress is the fact that radium is being used exclusively in cancer of the cervix by many of our ablest surgeons. It is of interest to note that Dr. Howard Kelly recently expressed the opinion that practically all cases of cancer of the uterus are inoperable—not in a technical sense, but inoperable, if the welfare of the patient is to be the first consideration. Moreover, in presenting these views on the efficacy of radium therapy in carcinoma of the cervix, he is but voicing the opinion of many of our ablest surgeons—among whom may be mentioned Crile and other surgeons at the Cleveland Clinic, Burnam, Ochsner, and many others—who are discarding surgery for a treatment of far greater value.

Concerning carcinoma of the fundus, on the other hand, most surgeons still favor the operative treatment, although, even in this connection, Kelly (2) has found that in cases where surgery was contraindicated, radium was employed not only with great success, but with prospects of prolonged and remarkable improvement. In some of these patients he found that curettage, at a later date, showed the changes characteristic of radium, and an apparent entire absence of any cancer.

Likewise, in borderline cases, in the hands of competent radiologists, results are far more encouraging than when surgical means are employed. In fact, it appears to the writer that this is one of the main fields in which radium has demonstrated its greatest value, unless it be in the treatment of recurrences of carcinoma of the uterus. Here, however, great discretion must be exercised, for if too far advanced or in too close proximity to the bladder or rectum, severe functional disorders may be engendered at the expense of their regression.

To those patients who, unfortunately, have been denied the privilege of an early diagnosis, hemorrhage is probably the most important of the symptoms concomitant to cancer of the uterus; in fact it is this condition which usually leads the patient to seek medical advice. Too often, however, the disease at this stage has invaded the contiguous tissue, and marked destruction, often accompanied by involvement of other organs, has taken place. Frequently there is an involvement of the rectum or bladder. To determine whether the latter has taken place, a cystoscopic examination must, of course, be instituted. If the examination discloses an involvement of the bladder, relief of the cardinal symptoms, for a short time, is all that can be accomplished.

The continuation, until rather recently, of surgery in the treatment of cancer of the uterus must not by any means be construed as significant of a great measure of success; it was employed, rather, as the best available means at hand, in the hope that a more efficient therapy would be evolved, by means of which mortality could be more greatly reduced. This, we believe, is attained through radium therapy.

According to records obtained from several of our large clinics, we find that only forty per cent. of cases of cancer of the uterus which come for treatment are operable. Of this forty per cent. there is a mortality rate of ten per cent., leaving thirty-six cases out of one hundred that survive operation. According to their own statistics, a claim of twenty-five per cent. well, after five years, means that twenty-five per cent. of thirty-six cases (which is nine) remain well. Thus, the claim of twenty-five per cent. is misleading, as it does not mean twenty-five cases out of a hundred, but in reality only nine.

These figures and similar records cannot fail to strengthen the prevailing opinion as to the inefficiency of surgery in combating this condition. It therefore seems incomprehensible that there are still some surgeons who cling to the older methods in the treatment of cancer of the cervix; and we hope, in the near future, that this fallacy of vision will give way to better judgment. It is appalling, when given the final analysis, that we should still continue with a treatment that has so little to offer.

The knowledge gained by years of experience with radium has brought about a comprehension of its great therapeutic value; also a familiarity with its limitations. Judgment of radium therapy should be based on present day accomplishment exclusively, not on results obtained in our early work. Technic then was crude in comparison with that of today, it having since constantly undergone improvement. Ten years' experience with this form of radiotherapy in uterine cancer has afforded us sufficient opportunity to evaluate results thus far derived, in the light of which we feel no hesitation in predicting even proportionately greater strides in the near future, in the treatment of this disease.

Even the most enthusiastic radiologist, however, will not fail to acknowledge that there are limitations beyond which he should hesitate to venture, the decision in each case being influenced by many factors, among which may be included the extent, type, location of the metastasis, complications, radiosensibility of the patient, and, to a great extent, by his own particular experience with radium therapy. Unless great discretion is exercised much suffering will result, and radium will become as discredited as is surgery for the relief of this condition. For, while the practice of radium therapy—although still a comparatively recent one—has undoubtedly proved to be the method of choice in the treatment of malignancy by cautious and scientific workers, its practice in the hands of those who are inexperienced is greatly to be condemned.

In conclusion, it is earnestly to be hoped that a closer cooperation will develop between the surgeon and the radiologist, for it is not the writer's intention to claim that radium therapy is a cureall for malignant conditions. Although he believes that its efficacy is infinitely greater in curing and relieving the special condition under discussion, often a combination of radium and surgery gives better results than either means employed exclusively. Only through constant and serious application and scientific research by examining physician, surgeon, and radiologist, can the best results be attained.

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3831 North Delaware Street.

A Plea for the Preservation of the Perineum and a Modified Prophylactic Episiotomy for the Prevention of Perineal Lacerations*

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Perineal lacerations during parturition are as old as the human race and the most frequent of all labor complications. Their occurrence is in direct proportion to the attempts, on the part of the obstetrician in charge, to facilitate and hasten the course of labor, by the premature application of modern mechanical and technical methods. These perineal injuries are frequently unavoidable, regardless of the experience of the operator and the dexterity and skill employed. According to figures given by Olshausen, Ballandin, Schroeder, Williams and many other obstetrical authorities, these perineal lacerations occur in from twenty-two per cent. to sixty-six per cent. in primaparæ and in from ten per cent. to fifteen per cent. in multiparæ.

The factors predisposing to intrapartum perineal lacerations are numerous, the most common of which are the following: Disproportion between the presenting parts and the vulval outlet; abnormality in the mechanism of labor, such as improper flexion or extension of the presenting parts; sudden and rapid expulsion of the fetus, especially when followed by the administration of pituitrin; a narrow pubic arch; rigid perineum, as the case may be in senile primaparæ; mechanical interference, etc. No part in the field of obstetrical and gynecological activities has been so little respected as the perineum during parturition. The injury of the perineum during childbirth often forms the primary focus of infection of a widespread pelvic pathology with all its concomitant results, frequently terminating in mutilating, major, pelvic operations, which result in subsequent sterility and many other permanent deformities.

Numerous therapeutic and mechanical appliances have been introduced in the field of obstetrics for the purpose of relieving the agony of childbirth and accomplishing a rapid and successful delivery of the child. Little, however, has been offered for the purpose of preventing traumatic complications of the pelvic muscles during parturition. A vast number of ingenious methods have been devised for the purpose of repairing perineal lacerations, but few methods have been described for the prevention of their occurrence. Those that have been advanced have proved ineffective and, therefore, are rarely employed by the profession. Giffard, a prominent English obstetrician, of the eighteenth century, was the first to call to the attention of the medical profession the advisability of attempting to prevent perineal lacerations during childbirth. Since then, a few methods have been advanced for the preservation of the perineum.

In all these methods, attempts are made to support the perineum, by pressing upon it during the height of perineal distention, caused by the pressure of the presenting parts, in the course of the uterine contractions. These socalled perineal pressure methods, for obviating perineal injuries, are uniformly highly unsatisfactory, as they do not accomplish the purpose for which they were devised. By repeatedly subjecting the perineum to pressure by the presenting parts from within and the hand of the obstetrician from without, during the process of perineal distention caused by the uterine contractions in the second stage of labor, these muscles are traumatized by this maneuvre. At the same time the normal blood supply to these muscles is obstructed and subsequently deprived from performing their normal biological function of muscular elasticity and contractility and ultimately retarding, instead of accelerating, the normal course of labor.

Another method practised by some obstetricians for the preservation of the perineum during parturition is the socalled fetal head pressure method; i. e., instead of supporting the perineum directly, in order to control the degree of perineal tension, it has been suggested to support the head of the fetus by pressing against it, during the uterine contractions, thereby directing the course of the head in the vulval cavity and correcting, at the same time, it is maintained, overflexion or overextension. This latter method, to my mind, is not better than the former and furthermore, it is more dangerous than the perineal pressure method mentioned above. Subjecting the fetal head to the pressure of the obstetrician's hand may result in intracranial hemorrhage of the newborn and, at the same time, it does not prevent perineal lacerations. It is not the presenting head alone that tears the perineal muscles, but the shoulders or any other part of the baby. Any mechanical manipulation employed in delivery may cause the same damages to the perineum.

Another method used for the prevention of perineal lacerations, during the second stage of labor, is the episiotomy, one which is comparatively little used, owing, apparently, to the unsatisfactory results obtained from its employment. The modification of this method, to my mind, would make an ideal procedure to prevent the mutilation of the pelvic floor during parturition. The indication for the performance of an episiotomy, as outlined by the limited number of obstetrical writers, should be modified. According to these obstetrical authorities, this little, simple and highly valuable operative procedure should only be used in emergency cases, as a last resort. In other words, it is advised to perform an episiotomy only after the perineum has been stretched to the point of maximum elasticity, resulting from repeatedly prolonged and continuous pressure upon it by the presenting parts and when the rupture of the perineal muscles seems imminent. Only under such conditions is it advised to perform an episiotomy, by making an oblique incision on

*Read before the Clinical Society of the Bronx Hospital, October 8, 1923, and before the Obstetrical and Gynecological Society of the Bronx, January, 1924.

FIG. 1.—Cutaneous scarification outlining points and course of sutures.

either side, between the anus and the ischial tuberosities, and thus relieving the tension of the perineum by directing the pressure of the presenting parts to the path of least resistance, i. e., in the direction of these incisions. It is the modification of this little operative procedure and the extension of its indications that I wish here to advocate.

FIG. 2.—Introduction of sutures without making incision.

MODIFICATIONS OF EPISIOTOMY

Based upon the highly satisfactory results obtained from a number of obstetrical cases, I take the liberty of recommending the following modifications in the performance of an episiotomy, as a reliable method for the prevention of mutilation of the perineal muscles and, necessarily, for obviating rectoceles and cystoceles, which are so frequently observed, following normal deliveries without any visible tears of the perineum:

Episiotomy should be performed for prophylactic purposes and not as an emergency requirement. It should be a method of choice and not one of necessity. The incision should be under control and not allowed to be torn by the pressure of the presenting parts or by any mechanical interference. Sutures should be introduced before the incision is made and the landmarks should be definitely and clearly preserved. There should be a unilateral and not a bilateral incision. The point and the course of the incision should be changed.

I wish to discuss briefly and separately each of these points.

EPISIOTOMY AS A PROPHYLACTIC MEASURE

Episiotomy should be performed as a prophylactic measure for the preservation of the pelvic muscles, especially when difficulty during the second stage of labor is expected, such as a rigid perineum, version, the application of forceps or the contemplated use of any mechanical assistance. Under such conditions a prophylactic episiotomy should be a prime indication, thus creating more room to permit the free introduction of the obstetrician's hand into the uterine cavity, without any fear of subjecting the perineum to the risk of being torn, as a result of manipulation. The perineal muscles should not be subjected to prolonged and forcible pressure by the presenting parts, in the course of the repeated stretching of the pelvic floor. When the presenting parts have reached the perineum the danger of stretching the levator ani muscles begins. Whether this forcible stretching will terminate in permanent injury to these muscles, cannot be predicted before termination of labor.

Subjecting the perineum to a prolonged and forcible stretching, as the case happens during the second stage of labor, may often result in a concealed laceration of the levator ani muscles or paralysis of these muscles, which is just as bad, if not worse, than a complete tear of the perineum. Solution of continuity frequently results in lacerations of the vaginal wall, sphincter and levator ani muscles, without external signs. The effects of these lacerations are observed only a few weeks postpartum, by the gradual appearance of a marked rectocele or rectocystele. This is usually discovered by another physician, to whom the patient applies for an opinion on her postpartum morbidity and who is surprised to learn that she had been torn during her last confinement, in spite of the fact that her confinement doctor had honestly assured her that she had passed through her difficult labor without even a scratch. These pelvic damages, whether of a visible or concealed character, are the unavoidable results from subjecting the perineum to prolonged pressure distention exerted by the presenting parts and the manipulation in delivering a large passenger through a small passage.

FIG. 3.—Incision following course of levator muscle.

Therefore, to obviate these predominating intrapartum pelvic injuries, more room should be created in the vulval outlet, by performing a prophylactic episiotomy, in cases of obstruction at this outlet, such as rigid perineum, large head, abnormal presentation, mechanical interference, etc. The episiotomy should be performed as soon as the presenting parts begin to stretch the perineum and not delayed until these muscles have been stretched beyond the point of muscular contractility and biological regeneration, at which time an episiotomy will be of no more benefit to the perineum, as the damage to the perineal muscles will have been completed. An early prophylactic episiotomy saves the perineum from being mutilated by the presenting parts in the process of the second stage of labor; it prevents rectocystoceles, by saving the vaginal portion of the levator muscles; shortens the perineal stage and hastens thereby the process of labor.

CONTROL OF INCISION

The control of the incision for the prophylactic episiotomy and the preservation of its landmarks are of prime importance. The introduction of the sutures should be done before making the incision and this should be carried out as follows: As soon as the presenting parts have reached the perineal floor and bulging has begun, introduce three long, loose sutures, using a large curved needle with the proper suture material, introducing the needle through all the layers between the skin and the anterior vaginal wall, i. e., the skin, subcutaneous tissue, adipose tissue, bulbo cavernosus, fibres of the levator muscle and through the anterior vaginal wall. These sutures should be introduced about one third of an inch apart, beginning from the edge of the vulva and placing them in a semi circular course, with the convexity upward, outward and downward, so as to follow the direction of the fibres of the vaginal portion of the levator muscle.

The sutures should be left loose in the vaginal cavity, lest they tear during the perineal distention, caused by the pressure of the presenting parts, and for the same reason the ends of these sutures should hang loosely outside, without attaching any clamps to them.

As soon as the perineum has undergone a reasonable degree of stretching an incision should be made between the first and the second sutures and, if this incision does not create sufficient room to allow the presenting parts to pass through, as will be manifested by the degree of the perineal tension, it should be prolonged in the direction of the next two sutures, thus preventing this incision from being torn during the height of uterine contractions. After the baby has been delivered and, while waiting for the expulsion of the placenta, the prophylactic sutures are pulled together and tied, without the slightest damage to the perineal muscles, producing a clean wound with perfect coaptation of the edges and the landmarks clearly and definitely preserved.

Prior to the introduction of the sutures it is advisable to make a semicircular cutaneous scarification, outlining the direction of the sutures and the course of the incision.

INTRODUCTION OF SUTURES BEFORE INCISION IS MADE

In selecting the point and the course of the incision for the prophylactic episiotomy, one should be careful and guard against damaging the levator muscles too much, as these are the most important muscles of the entire female pelvic cavity. Their proper function and exact dynamic value have as yet not been fully estimated, according to the opinion of numerous modern gynecologists. By their multitudinous attachments and the distribution of their fibres, these muscles have the power of balance and hold in equilibrium all the organs of the female pelvic cavity. While it is impossible to make any incision in the female rectovaginal field without encountering some of the fibres of the levator muscles, I venture to state that the oblique incision, i. e., the one made between the anus and the ischial tuberosities, as practised by the limited number of obstetricians who make use of an episiotomy, is the one that causes the most damage to the levators, by striking the shanks of these muscles. It also cuts the fibres of the levators across. Again, the posterior longitudinal episiotomy, i. e., where the incision is made in the rectovaginal septum, is equally unsatisfactory, because it does not heal well, owing to the connective tissue of which it is made up. Besides there is the danger of tearing through the anal sphincter, which may be caused by a sudden expulsion of the fetus, during a strong uterine contraction.

In order to avoid the ill effects that may result from either a posterior longitudinal or anterior oblique incision, I make a round incision. I begin at the edge of the vulval orifice, at a point about one half inch above the fusion of the labiæ majoræ and minoræ, coursing upward, outward and downward, between the previously introduced prophylactic sutures and following the course of the fibres of the vaginal portion of the levator muscle I strike neither the shanks nor cut across this muscle, thus causing the least injury to the levator muscle and, consequently, preventing rectocystoceles, so commonly observed shortly after parturition.

UNILATERAL INCISION

There should be a unilateral and not a bilateral incision. The cut should be made on the side which undergoes the greater amount of pressure caused by the presenting parts and, prolonging this incision, if necessary, in the direction of the sutures, will create ample room for the delivery of the baby, without subjecting the vulva to a double scar and, at the same time not damaging the perineum.

RECAPITULATION AND CONCLUSION

1. Perineal lacerations during labor are frequently unavoidable.
2. Prevention of these lacerations by supporting either the perineum or the head of the fetus is unsuccessful in the majority of cases.
3. The episiotomy, when used as a matter of emergency requirement, is ineffective because the muscles have been traumatized too much to undergo regeneration.
4. A prophylactic episiotomy, without introducing the proper sutures, before making the incision, will destroy the landmarks and will not give the desired results.

5. The anterior oblique or posterior longitudinal incisions are ineffective and frequently dangerous.

6. The modified prophylactic episiotomy as described in this paper is more effective. It protects the perineum and prevents rectocystoceles. This modified prophylactic episiotomy has given me such gratifying results, when the patients have been examined several weeks postpartum, that I take the liberty in recommending it to the profession and trust that the results obtained will be equally satisfactory.

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Importance of Early Diagnosis in Ectopic Gestation

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In opening a discussion on this subject from the viewpoint of the title given we realize that to touch all phases would be impossible in the short time allotted, so necessarily I shall mention only some of the more salient points. The number of cases for each individual physician are so few that it is hard to get an idea of statistics unless we quote from those compiled by others; a number in this paper are from Schumann.

About the middle of the eleventh century Albucasis, an Arabian physician, called attention to the condition and reported the first recorded case. Many different definitions are given for this condition but for brevity we may summarize by saying that it is the condition where the ovum lodges and imbeds in any situation outside of the uterine cavity. The frequency of this condition is much greater than is generally thought. The statistics of all the hospitals of Philadelphia for the year 1918 showed one ectopic gestation to every 167 full term intrauterine pregnancies.

The age at which this is most frequent, according to Farrar's reports, showed sixty-three per cent. of the women were between twenty-four and thirty-three years of age; of course this is the most active childbearing period of a woman's life.

There are many varieties, as lodgment of the ovum may take place anywhere in its passage from the ovary to the uterine cavity.

A few varieties (quoting from Kelly) are:

Primary Forms	*Secondary Forms*
Interstitial	Intrauterine
	Abdominal
	Intraligamentary
Tubal	Abortion
	Tuboabdominal
	Tuboovarian
	Abdominal
	Intraligamentary
Ovarian	Abdominal

According to statistics probably the most frequent sites of lodgment in the tube is the ampulla portion, and the isthmian portion the next.

The causes are many; usually we are unable to determine the cause for the particular patient in mind. These may be divided into the following:

1. Obstruction, from without the tubal lining.
2. Obstruction from within the tubal lining.
3. Anomalies of the tubal lumen, accessory tubes, etc.
4. Decidual reaction in the tubes.
5. Growth of the fertilized ovum being so rapid outside of the tube until when it enters it can't pass.

These are being further divided: 1. a, Peritubal adhesions, perisalpingitis and other conditions; b, constriction from pressure of tumors and other causes. 2. a, Salpingitis destroying the epithelial coat; b, malformations were found in fifty-four per cent of sixty-eight cases reported by one author; c, the cause widely accepted being the simple one of some mechanical arrest of the fecundated ovum during its tubal journey brought about by inflammation.

SOME OF THE TERMINATIONS OF ECTOPIC PREGNANCY

1. Early death of ovum with complete resorption and restoration of the tube to its normal state.
2. Death of the embryo with formation of tubal mole.
3. Tubal abortion.
4. Rupture of the pregnant tube into the peritoneal cavity.
5. Growth and development to term, until fetus dies or is delivered by section.

A FEW OF THE SECONDARY TERMINATIONS OF ECTOPIC PREGNANCY

1. Tuboabdominal pregnancy.
2. Secondary abdominal pregnancy.
3. Tuboovarian pregnancy.
4. Intraligamentous pregnancy.

END RESULTS OF ECTOPIC GESTATION

1. Resorption of products of gestation.
2. Tubal mole.
3. Hematocele which may be: a, diffuse; b, solitary; c, may become infected.
4. When fetal development continues the fetus may become: a, lithopedion; b, mummified; c, adipocere; d, skeletonized; e, may suppurate.

A study of the anatomy and pathology of extrauterine pregnancy shows that an ovum can develop only on a spot free from epithelium, sinking through decidua to rest on subepithelial layer. Necessarily

*Read before the Chattahoochie Valley Medical Association, Warm Springs, Georgia, July 8, 1924.

there must be some abrasion or disease along the tract making possible a nidus for the ovum's resting place.

Further statistics show that the bleeding occurring at the time of a ruptured ectopic gestation is from the endometrium of the uterine cavity, venous in type, rather than from the tube affected. The uterine bleeding literally is of sympathetic nature—sympathetic labor—at the time of rupture of the ectopic pregnancy.

The size of the decidual cast depends on the duration of pregnancy. According to statistics a large percentage of the fetuses in ectopic pregnancy are deformed or show malformation. Von Winckel thinks that fifty per cent. show deformity. As a rule the fetus dies before the third month.

Many cases of recurrences of ectopic pregnancies are reported where the affected tube, or a part of it, has been left in place at the time of operation for ruptured ectopic pregnancy. There are so many that I do not believe it wise to leave the tube intact, as the factor causing the first ectopic pregnancy may cause a second to occur in the same tube. As to the advisability of removing the other tube, I do not think it fair to remove it merely as a preventive measure; we should have some definite reason.

The question of diagnosis is the important part of this subject, as possibly there are many more cases not diagnosed before rupture than there are diagnosed, and if it were possible to make a correct diagnosis before rupture in all of these cases we would have fewer fatalities charged against us.

So long as life and growth go along we have no hemorrhage. Pain is one of the first symptoms. Practically every case shows some menstrual anomaly if such be recognized.

CONCOMITANT SIGNS OF PREGNANCY

1. Amenorrhea.
2. Morning sickness.
3. Pain and tingling in breast.
4. Increased pigmentation of areas, nipples, etc.
5. Softening of cervix.
6. Enlargement of uterus.
7. Cyanosis of vaginal mucosa.
8. Increased antiflexion of uterus.
9. Frequency of urination.
10. Abderhalden reaction; this latter is accepted as of little diagnostic value.

Long intervals between pregnancies is an alleged cause of ectopic gestation. We all appreciate that preexisting pelvic diseases are important etiological factors. On bimanual examination the uterus is usually found in antiflexed position. The enlargement of the uterus is not in proportion to the duration of pregnancy. Microscopic findings of chorionic villi in decidual tissue establishes the diagnosis of intrauterine pregnancy. Decidual cells without villi predicates the existence of extrauterine pregnancy. Bimanual examinations, where ectopic pregnancy may exist, should be made with extreme gentleness lest the tube be ruptured.

As a rule there is low temperature, 99° to 102° F.; leucocytosis of low degree ten to twelve thousand. Blood pressure is usually unchanged before rupture.

Ectopic gestation should at once be suspected when a woman, who has menstruated normally for a long period, suddenly goes over from four to twenty days, notices blood coming from vagina differing in quality, color, and quantity from the normal, which continues, and who has pains generally severe in one or the other side of the pelvis or in the hypogastric region.

In the asthenic type we at once notice depression as a dominant factor. The history as a rule is as follows: While doing her work the woman was seized with agonizing pain in the lower abdomen followed by syncope, skin cold, clammy, leaky and anemic. The temperature was below normal. There was collapse and shock, pulse rapid and thready, rapid shallow respiration, sighing for breath, contracted pupils, facies of extreme anxiety, restlessness, thirst, air hunger; mentally not impaired, but too sharply acute.

With these symptoms, and the physical finding of tenderness and other conditions, it is suggestive of ectopic pregnancy, but we have some differential points of diagnosis to keep in mind, as follows: Intrauterine pregnancy with threatened abortion; hemorrhage from tube or ovary not related to pregnancy; acute salpingitis; acute appendicitis; ovarian cyst with twisted pedicle; rupture of gastric or duodenal ulcer; ureteral or renal colic.

If there is blood in the cul de sac the patient has pain on defecation or on rectal examination.

Where there is intrauterine abortion, bleeding is more profuse and red in color. Where hemorrhage is from a ruptured ectopic pregnancy, blood is more scanty and brownish in color, it is the venous type. The temperature as a rule is higher in ruptured ectopic pregnancy than it is in intrauterine abortion. Ectopic pain is usually localized over one or the other tubes, begins suddenly with greater severity, with general abdominal pain later. The mass is felt more to one side.

In uterine abortion no mass is felt on either side, and the uterus is larger than in ectopic pregnancy. Positive histological diagnosis is only to be made by finding chorionic villi cells in suspected tissue.

After mentioning a few points as to frequency, age, anatomical and pathological conditions, symptoms and diagnosis, I feel that we all certainly appreciate the magnitude of this subject and the responsibility that every one who makes diagnoses and treats women have in making as early a diagnosis as possible. This responsibility does not rest on those of us who are doing gynecology and obstetrics as a specialty alone, but on every one whether he be doing general surgery, internal medicine, or any of the other specialties or general practice, if he is treating women he has his share of the responsibility, for the diagnosis has to be made at some time and the earlier the better.

Now as to treatment, after diagnosis has been made, I feel this can be summed up almost in one word, operative, of course there are a few cases in which it might be better to wait a little, but after supportive treatment has been administered as a rule the quicker we get in and ligate the bleeding vessels the better chance will our patients have for recovery.

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Toxemia of Pregnancy Complicating Hydatiform Mole*

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Of necessity, it is impossible to take up any of the problems connected with this interesting phase of pathological pregnancy in the short space of time allotted me. Nevertheless, a few words touching upon the salient features of this condition before proceeding to the history of the case will not be amiss.

Hydatiform mole is a vesicular degeneration of the chorion and is evidence of epithelial proliferation resulting from lack of a protective ferment or secretion in the body. It is usually an end result which takes months to develop. Clinically, moles are divided into two classes—those in which the mole is expelled in toto, and those in which it is adherent from invasion of the uterine muscle.

While the etiology and pathology of these neoplasms are not yet fully understood, they are assumed to be based on biological reactions. The process by which the placental tissue undergoes degeneration and becomes gradually detached from the uterus, and the causes which produce these changes, are not well known. It is, however, certain that the influence of the ovary plays an important part, particularly the graafian follicle rather than the corpus luteum. Despite the fact that corpus luteum cysts are present in nearly all cases of mole of either microscopic or macroscopic size, no relationship between the coexistence of mole and corpus luteum cyst can be shown. The luteum cyst regresses on removal of the mole. It is not the cause of the mole, but the reverse, as is shown by the reversion of the cyst. The influence of the mole is that of stimulation of the lutein tissue. A general hyperplasia of all the lutein material of the ovary takes place in normal pregnancy, and when there is hypertrophy of the villi, as takes place in the mole, the intensified process so stimulates the normal lutein hypertrophy that cysts develop. It would seem that just as the corpus luteum of ordinary pregnancy has a defensive function as regards the toxines of pregnancy, the presence of these cysts might be construed as an attempt on the part of the organism to multiply the luteum cells when they have to neutralize the greater quantity of toxins which are generated by moles. This seems to be the most logical explanation of the processes involved, although not definitely proven.

The characteristic clinical picture of mole is the occurrence of bleeding in the early months of pregnancy and a uterus which is disproportionately large for the supposed state of pregnancy. The bleeding usually begins about the second or third month, is more or less continuous, and may at times be profuse. The mole may occur at any stage and at any period of pregnancy, but is more frequent in the early months. Many of the cases present light toxic manifestations.

That the condition is not devoid of danger is shown by a mortality of from ten to fifteen per cent. The causes of death are hemorrhage, sepsis, uterine perforation with subsequent peritonitis. The relationship between moles and chorioepithelioma is too well known to be dwelt upon here.

The tendency at present to remove the uterus in all cases where mole is diagnosed should be condemned and combatted in the strongest possible manner. Manual removal of the mole is the method of choice, with vaginal hysterotomy resorted to if necessary. Any suspicion of malignancy should call for total hysterectomy.

To sum up briefly I may state the following: Moles originate from placental tissue and their formation is influenced by changes in the ovary. Most likely these changes take place in the graafian follicle. Moles cause cysts of the corpus luteum. They should be treated from the viewpoint of hemorrhage and sepsis, bearing in mind the possibility of chorioepithelioma. Manual removal is the method of choice, and if found impossible vaginal hysterotomy. Any suspicion of malignancy should call for hysterectomy.

The following case is of interest because of the presence of a hydatid mole without any fetal elements, together with what appears to be a true toxemia. Toxemia associated with pregnancy is not uncommon, but that combined with a pathological pregnancy makes the case instructive and interesting.

CASE.—The patient was admitted to the hospital on June 7, 1923, with the following history obtained through the kindness of her family physician. Mrs. F. S., aged twenty, married, with one child ten months old. Her family history was negative. She began to menstruate at the age of thirteen, was always regular, of the thirty day type, four days' duration without pain. Ten months previously she had given birth following a normal delivery. Her last period was in the first week of November, 1922, four months after the birth of her child. Soon after skipping her period she began to vomit; this lasted for two weeks. In April, or the fifth month, the vomiting began again and became very severe, so much so that she was forced to go to bed. She said that she felt fetal movement. In May she began to spot intermittently. Under the influence of lutein injections there was slight improvement for two weeks, when the entire symptom complex returned. Vomiting became more severe and spotting again took place. She was unable to retain anything. The urine at this time showed marked traces of albumin, pus and hyaline casts. The blood pressure was 135 over 60. About this time a slight irritating cough developed with bloody expectoration. Such was her history when she was admitted to the hospital.

Examination revealed the following: The patient looked acutely ill, emaciated (had lost twenty pounds in weight), temperature a little above 99°,

*Read before the Bronx County Medical Society, May, 1924.

pulse 110, respirations 20. Heart and lungs were negative. Abdomen: fundus uteri was very sensitive to touch reaching to one inch above the umbilicus. Vaginal examination: slight bloody discharge was oozing from the vagina, cervix was soft admitting the tip of one finger. Eyes: fundus showed a venous congestion. Blood examination: 3,720,000 red blood cells, 7,800 leucocytes; 72 per cent. polymorphonuclears; 28 per cent. small lymphocytes. Blood chemistry urea nitrogen 18.9 mgs., creatinin 1.5, sugar 0.7. Daily examination of the urine showed diminished output, marked traces of albumin, hyaline and granular casts and many red blood cells.

In spite of all treatment the vomiting continued. Blood pressure went to 142 and the output of urine diminished to eight ounces in twenty-four hours. The cough was irritating and the mucus was constantly streaked with blood. The pulse ranged between 110 and 125. The patient seemed to be going down hill and after the consultation with the medical department it was decided to terminate the pregnancy. On June 12th the cervix was dilated sufficiently to allow the insertion of bag. Within twelve hours the patient went into labor, pains became quite severe and on the following day the bag was removed. On inserting the hand into the uterus a great mass of hydatid tissue was removed piecemeal. After making sure that the uterus was empty it was packed and the patient was returned to bed.

During convalescence the temperature dropped to normal but the pulse remained 110. The pathologist reported no signs of malignancy. X ray picture of the chest proved negative. She was discharged from the hospital on June 23rd. On August 11th she had her first period lasting five to six days, had put on weight and felt normal.

The prominent features of the case were as follows: 1. Although the diagnosis of mole was not made in this case, the objective findings presented a true clinical picture of a hydatid mole. 2. The total absence of any fetal parts. 3. The extreme loss of weight, the severe and persistent vomiting in spite of all treatment, the elevated blood pressure, and the renal involvement as manifested by the laboratory report justifies the diagnosis of a true toxemia of pregnancy rather than the mere toxic symptoms often associated with moles. 4. In view of the pulmonary symptoms, the negative physical signs and negative x ray findings, it is plausible to assume that the pulmonary condition may have been due to metastases from the uterus, which, upon removal of the mole, cleared up.

I am indebted to Dr. Max Rosenthal, chief of our department, for permission to report this case.

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Spontaneous Rupture of the Uterus

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I wish to report a case of spontaneous rupture of the uterus, which occurred in the maternity section of the University Hospital in the service of Dr. Barton Cooke Hirst, professor of obstetrics at the University of Pennsylvania, with a brief discussion of the frequency, and causes of this rather rare condition.

C. H. Davis (1) has made a careful review of the literature and reported several cases of ruptured uterus. He divides the causes of this condition into five groups, namely, uterine, fetal, pelvic, vaginal and intrauterine complications. Lobenstine (12) states that generally contracted pelvis of moderate grade is the condition most often responsible for uterine rupture. He tabulates 588 contracted pelves in 1,342 uterine ruptures, or 40.83 per cent. In the statistics of the Lying-in-Hospital of New York, there are twenty-one contracted pelves in forty-six cases of complete rupture, or 45.65 per cent. In his series of 417 cases of uterine rupture, Trask considered that it was spontaneous in sixty-seven cases. Placenta previa is a cause of rupture of the uterus. Lobenstine (12) had five cases from this cause in forty-six complete ruptures, and thirteen in twenty-nine incomplete. Schmauch says that in placenta previa there are six times as many cervical tears after version as there are following spontaneous delivery. In my case, a diagnosis of premature separation of a normally situated placenta had been made. Louis E. Phaneuf was unable to find any reference to cases of spontaneous rupture which had been associated with premature separation of the placenta. He reports two cases in which spontaneous rupture was associated with premature separation.

Rupture of the uterus is more common in prolonged labors than in short ones. Trask gives a list of 147 cases in which the time from the beginning of labor till the rupture occurred is recorded. Thirty-eight ruptures occurred within the first six hours; thirty-six during the second six hours, and 104, or seventy per cent., in the first twenty-four hours. Collin's statistics of 15,850 normal cases, show that in 13,412 cases, or eighty per cent., the labor was terminated within six hours. In Lusk's series the cause was attributed to the use of ergot in sixteen cases. The fetal causes of rupture are mainly hydrocephalus, malpositions, and malpresentations. Among uterine causes are retraction ring; cicatrices following Cæsarean section, previous ruptures or trauma; tumors of the uterus, anomalies of the uterus, such as uterus duplex and uterus unicornis. The chief pelvic cause is contracted or deformed pelves. Among the intrauterine complications, instrumental delivery, version, and manual removal of the placenta are the chief causes of rupture.

The cause of spontaneous rupture is not known. The examination of a spontaneously ruptured uterus may show no disease in the uterus. The muscle

may be entirely normal. Numerous theories have been advanced as an explanation for its occurrence. Lobenstine reports twenty cases in his series of forty-six cases. Ivanhoff studied the uterus histologically in nineteen cases. He was unable to explain the rupture on the basis of histology, although he found considerable variation in the percentage of elastic and connective tissue. The theory of defective hypertrophy of the wall in the fundus is supported by the fact the seat of rupture almost always occurs in the fundus. Sänger states that while some of the theories advanced are acceptable in many cases, a satisfactory explanation of the etiology in all cases has not been advanced thus far. Examination of spontaneous rupture in cases where Cæsarean section had been performed previously, usually show the rupture to have taken place in the old scars. Bauereisen has found telangiectic changes in the lower uterine segment, and he believes that careful micropathological studies will find this a more frequent condition than inflammation, sclerosis, and fatty changes. Bauereisen also noticed a scarcity of elastic and connective tissue in the vicinity of the rupture. DeLee says, spontaneous rupture is excessively rare; it is found that trauma almost always preceded it.

Spontaneous rupture is much more frequent in multiparæ than in primiparæ. Uterine weakness because of previous pregnancies may be a decided factor in the occurrence. In my case there had been seven pregnancies. Ruptured uterus from various causes is more common in multiparæ than in primiparæ; Brandl gives the proportion as eight to one. Trask reports thirty-one primiparæ in 417 cases; Jolly, thirty-seven in 455 cases; Merz, fourteen in 320 cases; Petren, four in fifty-four Swedish cases; Cristenan, four in seventy-seven cases; 482 ruptures gathered from Brandl, Winckel, Koblanck, Kolaczek, *et al,* show 432 multiparæ, against fifty-seven primiparæ. Any operation upon the uterus that leaves a scar or fixes the organ, renders it vulnerable to rupture should pregnancy occur. Trask (1856) collected four cases of rupture following Cæsarean section. In 1886, Krukenberg reported twenty cases of rupture following Cæsarean section, and states that in fifty per cent. of all pregnancies after the old Cæsarean the uterus ruptured. Breitstein (13) reports a case, and Harrar (14) reports four cases of rupture following Cæsarean section. As previously stated, Davis reported four cases of ruptured uteri. In his fourth case, the rupture followed five deliveries and was apparently spontaneous. One of his cases followed application of forceps and attempts at the performance of version. The second case occurred in a patient who had had a previous Cæsarean section, and the third followed forceps operation.

REPORT OF AUTHOR'S CASE

Case I.—Mrs. M. S., aged thirty-two, married fifteen years, was admitted to the University Hospital on October 7, 1921. She had seven children, the oldest fourteen years old and the youngest four years old. Date of last period was January 25, 1921; confinement was expected on November 2, 1921. Her past medical history was negative. She had had four miscarriages; three were spontaneous, and one was selfinduced, two and one half years ago. Her menses commenced at the age of thirteen years, came at twenty-eight day intervals, and lasted five days. Her previous pregnancies had always been normal. Her condition during this pregnancy was good. She had no epigastric pain, no headache, no edema, no constipation. She had some varices of the vulva and thigh. Pelvic measurements: iliac spines 25 cm.; iliac crests 30 cm.; trochanters 32 cm.; external conjugate 22.5 cm.; internal conjugate (diagonal) 12 cm.; true conjugate 11.25 cm.; right oblique 25 cm.; tuber ischii 11 cm.; posterior sagittal 9.5 cm.; circumference of abdomen, 102 cm.

The history of her illness on October 7, 1921, was as follows: On October 6th she took a seidlitz powder. The following morning at 9 a.m., while at stool she was suddenly seized with stabbing pain in the abdomen. Since then, she had had severe constant, abdominal pain resembling labor pains, but apparently worse in the lower abdomen. She had not fainted. She had no cough, but was short of breath and was thirsty. She stated that she felt fetal movements shortly after the beginning of the pains. The patient appeared pale and looked quite ill. Pupils were dilated and reacted to light. The heart rate was rapid, but no murmurs were heard, and there was arrhythmia. The lungs were negative. The abdomen was globular and swollen to the size of an eight and one half months' pregnancy. The fundus reached about midway between the umbilicus and the sternum. The abdomen was tense and tender throughout. The uterus was tense and tender. No other masses were palpable. It was impossible to palpate the position of the child. There was apparently no rigidity of the anterior abdominal muscles. By auscultation, the fetal heart sounds were heard to the left and below the umbilicus.

Vaginal examination showed that the cervix was dilated about one finger; membranes not ruptured; cranium presenting; head not engaged; slight rectocele and cystocele present, perineum relaxed.

On October 7th a blood examination was made, showing red blood corpuscles, 4,000,000; white blood corpuscles, 22,000; hemoglobin, 78 per cent. Blood pressure was 95, 65. At 6 p.m. the patient vomited ten ounces of dark coffee colored fluid. At 8 p.m. she complained of more pain, and the abdomen was more tense than on admission. At 8.30 p. m. red blood corpuscles were 3,700,000, white blood corpuscles 21,000, and hemoglobin 74 per cent. At 9.00 p. m., a vaginal examination showed the same findings as on the first examination.

At 10 p. m., after about ten hours of observation, the patient showed no tendency to improve nor had she become much worse. The entire staff (Dr. B. C. Hirst, Dr. E. B. Piper, Dr. Kornblum) had seen her, and the unanimous diagnosis of "premature separation of a normally situated placenta" was made. In view of the apparent desperate condition of the patient, immediate operation was advised by Dr. B. C. Hirst.

At 11.30 p. m., operation was performed by Dr. F. V. Janvier and Dr. E. B. Piper. The vagina was disinfected with iodine and packed with gauze. Upon opening the peritoneal cavity through the usual incision for Cæsarean section, a considerable quantity of dark blood escaped. A dark, blue, spongy mass of tissue presented in the abdominal opening, which

proved to be placenta bulging through a rupture in the fundus of the uterus. The infant was immediately extracted but was in rigor mortis at the time of delivery. The placenta came away with the child. Two ampoules of ergot and one of pituitrin were given immediately. The ruptured uterus contracted, and there was little free bleeding. A high amputation of the uterus along with a bilateral salpingooophorectomy was performed. There was an ovarian cyst on the right side about the size of an orange. The cyst was removed and proved to be a dermoid cyst. The cervical stump and broad ligaments were peritonealized in the usual manner. Massive and numerous blood clots were removed from the peritoneal cavity. The abdominal incision was closed. The condition of the patient was fairly good throughout the entire operation, but because of the large amount of blood lost, five hundred c. c. of salt solution was given intravenously.

On the following day the patient's condition was very good and she was quite comfortable. On October 10th, a blood examination showed white blood corpuscles, 24,000, hemoglobin 43 per cent. On October 27th red blood corpuscles were 3,200,000; white blood corpuscles, 12,000; hemoglobin, 60 per cent. The patient was discharged in good condition on October 30th.

The interesting point in this case is that the symptoms were of such a character that a correct diagnosis could not be made. S. D. Van Meter (6) reports a case of spontaneous rupture resembling mine, in that the symptoms completely masked the true condition. Williams states, "In a number of cases, the hemorrhage following the accident was so slight as not to give rise to symptoms, and the condition escaped recognition until operative procedure became necessary for the removal of the fetus." In my case, the hemorrhage was very slight, and the condition was not discovered until operation. In such cases, where the correct diagnosis is in doubt, it is well for the patient to be in a hospital where operation can be performed at a moment's notice.

B. C. Hirst asserts that the accident is more frequent now than formerly, and this is usually an evidence of error in diagnosis or faulty technic. He also emphasizes the fact that the diagnosis is not so easy as one might suppose, and this is particularly the case in spontaneous rupture of the fundus. Finally, Hirst states that the routine abdominal section is not a necessary treatment in every case of uterine rupture. He says, "The hasty application of inappropriate means to extract the uterine contents or a clumsy effort to employ the right methods," increases the number of cases. He also adds, "that this accident is rightly regarded as a reproach to the physician in whose hands it occurs."

Hirst reports that of six cases occurring in nine months, every one resulted from instrumental or manual interference, and makes the statement that "undoubtedly, unskillful use of instruments, manual procedures, and failure to recognize dystocia are responsible for most ruptures." Of these six cases, in one, an effort to evacuate the uterus with curette forceps at the third month, for what was thought to be eclampsia but was probably hysteria, resulted in a perforation of the uterine wall, and the extraction and detachment of twenty feet of the woman's small intestines.

In another case, a woman was brought to the University Maternity by two physicians. One of them said he suspected that the uterus was ruptured, as in his last examination he believed he felt the liver. It was found that the uterus was not only almost completely torn away from the cervix, but both arms of the full term, overgrown infant had been pulled off, and two feet of the woman's intestines, stripped from mesentery, were hanging out the vulva. In a third case, the diagnosis was not made until operation. In a patient coming to the Howard Hospital a month after delivery, with what Hirst thought was an intraperitoneal abscess in the region of the umbilicus, at operation an abscess was found caused by a rupture in the fundus uteri from tube to tube. This rupture had never been suspected.

Louis E. Phaneuf, of Boston, reported two cases of spontaneous rupture associated with abruptio placentæ. As mentioned previously, he could not find reports of any cases of this condition.

Case II.—Mrs. M. P., primapara, aged thirty-three, married ten months, expected to be confined about April 15, 1918. On March 3rd, after being jolted in a street car, she commenced to bleed. She showed signs of exsanguination when examined. Her pulse was rapid, thready, and of very poor quality. She was blanched and in extreme shock. The uterus was firm, tense, painful to palpation, and the size of a large, full term pregnancy. There was no dilatation of the cervix, labor pains were absent, and fetal heart sounds were not heard. Because of the marked hemorrhage and the lack of dilatation of the cervix, it was decided to perform a laparotomy. On operation the uterus was found ruptured in the median line half way between cervix and fundus. The rent was through the peritoneum and muscularis, but not through the endometrium. A small stillborn fetus was delivered. Half of the placenta was separated, which was quickly removed, together with the membranes. The uterus was sutured in two layers. The patient died.

In this case, hemorrhage was the prominent symptom. In my case, hemorrhage was very slight and the patient's condition was unchanged for several hours.

Case III.—Mrs. A. K., married eleven months; confinement expected about April 25, 1919. She was admitted to St. Elizabeth's Hospital on April 27th; she was bleeding slightly; her pulse was 90 and of good quality. An hour later the pulse was 120, thready, and of poor quality. The uterus was tense and tonic. An immediate abdominal delivery was decided upon on account of the hemorrhage and the long rigid cervix without dilatation. On opening the peritoneal cavity, a rent about two inches long, running obliquely from the fundus toward the right tube, was incised in the median line. The placenta was practically separated. A small stillborn fetus at term was extracted by the breech; the placenta, membranes, and clots were removed, and the cervix was dilated from above. The uterine incision was sutured in two layers with No. 2 chromic catgut. The patient made a good ether recovery. She was given eight hundred c.c. of saline solution under the breasts, as well as a shock enema. She made a good recovery

and on May 23rd was discharged, the twenty-sixth day after operation.

S. C. Van Meter, of Denver, reported a case of spontaneous rupture of the uterus. In his case, a diagnosis of placenta previa was made by two physicians who had examined the patient. The patient, aged thirty-two, was eight months' pregnant. While walking in one of the parks, she suffered severe abdominal pain which she concluded was the commencement of labor. She was able to walk to a street car and reach the maternity home. Here the diagnosis of placenta previa was made. She had a normal temperature and pulse. The os was slightly dilated, and owing to her flesh and abdominal rigidity, the position of the fetus was not determined. Being unable to make a diagnosis, Dr. Van Meter was inclined to accept that of placenta previa. After watching the patient that afternoon and night, during which time there was no evidence of shock, and no progress towards delivery, the necessity of emptying the uterus became evident. The patient was prepared for operation. The hand was inserted into the uterus, the foot grasped, and the body delivered in the usual manner; but in attempting to extract the aftercoming head, the neck was suddenly severed. The fetus was macerated. On further examination the vagina was found to be filled with omentum, which cleared up the diagnosis.

The abdomen was opened in the midline. In the fundus of the uterus was found a transverse rent from horn to horn. The omentum was adherent to the posterior lip of the tear. The remaining exposed surface of the rent, except about three fourths of an inch in the right angle, was old and not bleeding. The omentum was freed from its adhesion to the uterus and the rent closed up. The patient made an uneventful recovery.

This case is of interest because the diagnosis of placenta previa was made, and the real condition not discovered till late. In my case, a diagnosis of premature separation of placenta was made.

In cases where the diagnosis is doubtful, operation should be performed early so as not to endanger the life of the patient. This case also resembles mine in that the chief symptom was pain. Hemorrhage was not a symptom in either case.

F. S. Oastler (9) reported two cases in 1918.

Case IV.—The patient, twenty-five years of age, single, was admitted to Lincoln Hospital on November 10, 1917, Para II. She gave a history of a previous pregnancy that was terminated by a basiotripsy following exhaustion and death of the fetus. The patient was admitted to the hospital at 7 a. m., having had pains for six hours. Strong contractions continued through the day and at 5 p. m. a sudden cessation of pains occurred. The contour of the abdomen changed, and a large mass could be palpated under the ribs on the left side, with a smaller mass low down on the right side of the abdomen. The patient rapidly went into collapse. On operation, the child was found free in the peritoneal cavity. The uterus was found to be contracted, and showed a transverse rent at the level of the uterovesical fold. A supravaginal hysterectomy was done and the patient made a complete recovery.

J. W. Long (4) reports a case of spontaneous rupture occurring during labor. Case: Mrs. A., aged thirty-two, married thirteen years, no former pregnancy, she was taken in labor at term on March 25, 1913, at 3 p. m. By 10.30 the head had descended well into the pelvis. At the height of a uterine contraction, the patient suddenly cried out complaining of undue pain in the abdomen; she had slightly hurried breathing for a few seconds, but there was little change in pulse. On examination, the head which was presenting had receded. Within five minutes after recession of the fetus the placenta was expelled spontaneously. The abdominal pains ceased, and the patient complained only of tenderness on palpation. The diagnosis was then made of ruptured uterus. Uterine examination was made and a large rupture in the left side of the uterus was discovered. An abdominal operation was performed. A longitudinal rupture was found through the left side of the uterus coming from deep in the cervix up through the body to Bandl's ring. The uterus was removed. The patient recovered.

Ross McPherson (5) reported a case of spontaneous rupture of the uterus.

Case V.—K. T., aged thirty-three, para II., was admitted to the New York Lying-in-Hospital, with the following history. She was pregnant in 1912 for the first time and was delivered by a high forceps at term, the child living only a day and a half. At the time of admission, she considered herself five months pregnant. The day before admission, she was seized with sudden, sharp, abdominal pain and felt somewhat faint. No history of accident or fall was obtained. She was admitted on the next day in a critical condition. When seen she was in extreme shock, pulseless, and with all the signs of abdominal bleeding. A saline infusion and the usual shock treatment were given, which failed to have any beneficial effect. Under ether anesthesia, the abdomen was opened, and the cavity was found filled with blood. A five months' fetus was found in the cavity and attached by the umbilical cord to the placenta which was still in the uterus. The uterus was ruptured transversely across the fundus. The fetus and placenta were extracted, and a rapid supravaginal hysterectomy performed. The patient was given a transfusion following operation, at the close of which she was conscious, pink cheeked, and with pulse at wrist of good quality. The convalescense was unmarked by complications.

Dr. John H. Telfair (7) reports a case of spontaneous rupture in which no manipulation had been made. His patient upon admission to Fordham Hospital at 10.30 p. m. on February 28, 1916, was in a condition of profound shock, presenting evidence of internal hemorrhage. She had no pains, and showed a moderate amount of bleeding from the vagina. Examination under ether showed a breech presentation. Operation was performed. The laceration of the uterus consisted of a transverse rupture of the vaginal vault anteriorly, extending to the left, opening up the broad ligament, and extending upward to the junction of the upper and lower uterine segments. A craniotomy and extraction was done, followed by an immediate hysterectomy. The patient died on the table.

Gordon Ley, of London, reports a case of spontaneous rupture of the uterus.

Case VI.—His patient, a multiparous woman,

aged forty-six, was admitted on February 10, 1917, to City of London Lying-in-Hospital. This present pregnancy was her twelfth. She had had nine full term labors, one instrumental, the last being in 1913, and two miscarriages, the last in 1914. She was at full term. The pregnancy had been normal to the thirty-fifth week, when she had a considerable hemorrhage lasting for one day. Since that date, she had slight losses until February 9th, when she had another considerable loss. There had been no pains. On February 10th, she was anemic; temperature 97; pulse rate 80; left occipitoanterior position. Fetal heart sounds were heard. There were no pains until February 11th when after a labor of one and one-quarter hours the baby was born alive. Ten minutes after completion of the third stage, the patient complained of sudden dyspnea. She became restless and her breathing was difficult and labored. The anemia increased, the pulse became feeble and rapid, and she died in fifteen to twenty minutes. A tentative diagnosis of pulmonary embolism was made.

On performing a postmortem examination, the following condition was revealed. There was extensive retroperitoneal hemorrhage into the substance of the left broad ligament, which originated from a rent in the left wall of the lower uterine segment. On opening the uterus longitudinally along its right border the placental site was seen on the posterior wall of the lower segment. The microscopical sections showed an apparently normal puerperal uterus lined by a decidua.

In this case, rupture was associated with placenta previa. Ley has seen three other cases of spontaneous rupture, all of which occurred in a Cæsarean section scar. He states that it might possibly be considered that erosion by villi would weaken the wall of the uterus in the region of the placental site, and therefore tend toward the occurrence of rupture. But in all sections of placental sites that he examined, a thin layer of decidua had separated the villi from muscle. He thinks, therefore, that we must assume that the causative factor does not lie here.

E. M. Colie (3) reports a case of spontaneous rupture of the uterus. He states that Dr. Brown and Dr. George L. Brodhead have also reported cases.

Colie's case was in an Irishwoman, thirty-four years of age, who had had six previous labors, all easy. She came under observation a month before her time of confinement. The first stage of labor lasted ten to twelve hours. After dilatation had taken place, there was no further advance. The membranes were unruptured. The patient complained of pains other than the labor pains. The student who was on the case went out for lunch, thinking that with unruptured membranes and regular pains, he was safe in so doing. He stayed out for one hour and on coming back he found the patient in bad condition. He made a diagnosis of internal hemorrhage. Dr. Colie was called in to see her, and made a diagnosis of ruptured uterus. Dr. Colie, considering that laparotomy offered nothing in this case, did a rapid version and extraction. The rent was felt in left uterine horn. The patient died in five minutes. No cause for the rupture could be found. There was no obstruction, the head was not large, and it was fairly flexed but not well engaged.

The two cases reported by George L. Brodhead occurred in multiparæ with normal pelves. Both had short labors, and both with a previous history of very easy labors. One of the patients died before the postgraduate intern could reach her. The other case was diagnosed immediately, and the patient operated on; the uterus was sewed up and the woman made a good recovery.

As regards treatment, abdominal section is required in the majority of cases. B. C. Hirst emphasizes the fact, however, that many a case of ruptured uterus may be saved by gauze packing of the pelvic and of the uterine cavity. The pelvic packing is left in for four days, when it is removed and replaced by fresh gauze. The packing is removed in twenty-four hours from the uterus. Packing is the indicated treatment in those cases where the rupture is in the lower uterine segment, cervix and vaginal vault. If the rupture is anterior or lateral, if there is much intraperitoneal hemorrhage, or if either the placenta or the fetus has escaped into the abdominal cavity, an abdominal section is required, and most likely a hysterectomy. In cases of much blood loss and shock, blood transfusion or the intravenous use of normal saline is of the greatest benefit to tide the patient over the critical period. Where there is much blood in the peritoneal cavity, and where there is need for haste, the Hirst method of performing supravaginal hysterectomy will save time. In his method clamps are placed on all arteries to check hemorrhage, and the uterus then removed. The clamps are removed one by one as the arteries are tied.

Petren in analyzing 754 cases of ruptured uterus found that of 501 cases treated conservatively there were 361 deaths, or a mortality of seventy-two per cent., while in 174 cases operated in there were ninety-two deaths, or a mortality of fifty-three per cent; of the 347 uncomplicated cases reviewed by Klein, 149 were operated in with a mortality of forty-four per cent; 198 were treated conservatively with a mortality of fifty-two per cent.

CONCLUSIONS.

1. Rupture of the uterus can occur without apparent cause. There are usually severe symptoms, such as pain or hemorrhage that should call the obstetrician's attention to the possibility of ruptured uterus. In other cases, several hours may elapse before symptoms are sufficiently marked to cause alarm.

2. It may be impossible to make a diagnosis of spontaneously ruptured uterus. On the appearance of symptoms pointing to internal hemorrhage, or other grave condition, laparotomy should be performed.

3. In all doubtful cases, the patient should be sent to a maternity hospital where she may be kept under observation, and radical treatment instituted when occasion arises.

4. No matter how badly off the patient may seem to be, prompt surgical measures may save her life.

5. Packing of pelvic and uterine cavities in ruptures of lower uterine segment may save the patient.

6. The value of actual blood transfusion is inestimable.

7. A careful examination of the patient should be made whenever she complains of abdominal pain.

Symposium on Geriatrics

Medical Journal and Record

Published Semimonthly by

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, DECEMBER 3, 1924

The Senile Heart

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In the days preceding the advent of modern cardiology a book was written by Balfour, a great clinician, entitled *The Senile Heart.* This book was spoken of twenty-five years ago as a model of clinical study and observation and was, undoubtedly, delightful reading, and illuminating. Since then there has been great advance and with the advantages of the new knowledge of the heart that has come through the studies of laboratory workers and of clinicians with the electrocardiograph, it seems the time has come when someone should approach the subject again.

The whole idea of senility has changed throughout the world. Old age no longer protrudes itself as a definite fact. The people of the present generation do not retire at a certain age; either men or women. So we are compelled, more than in former times, to fix a definite age for our senility. This age is probably not as early as it was formerly, for people do not begin life as early as they did. In this country education is much more prolonged and the easier circumstances of modern life make it possible for children to stay away from work longer. Nevertheless, the senile heart is a definite fact.

The most striking symptom of the senile heart is distress in the chest when a person attempts to do something which in former years he could do without much effort and one of the things that we must do in treating such a person is to teach him to respect this distress in the region of the heart and not to push beyond that point.

To no one as much as to the heart specialist does age appear purely relative. A man is as old as the flesh of his heart. We find middleaged people with infantile hearts and very young children with hearts, for all the world, like men of ninety.

A man of eighty-five comes to me who has a blood pressure of 120 and from time to time I see a child whose blood pressure is over 200. So the senile heart is not a matter of years but of condition. It may develop at any time. It does not surprise me any more when a man of thirty-five or forty shows, by technical examination, to have all the characteristics of a man twice that age. The senile heart is not a heart with a definite disease, but a heart which has undergone deterioration in the same fashion as appears naturally in extreme old age.

Fig. 1.—The senile heart.

If you are able to pass a life insurance examination or if you are otherwise informed that your heart is healthy and yet you cannot exert yourself as you formerly could without distress in the front of your chest, you are developing a senile heart and it behooves you to turn the hands of the clock backward by a suitable diet and a suitable regimen. If you do not, your days will become uncomfortable ones, with a great loss of efficiency. To turn the hands of the clock of the senile heart backwards it is necessary to do those things as a duty, after thirty, that you loved to

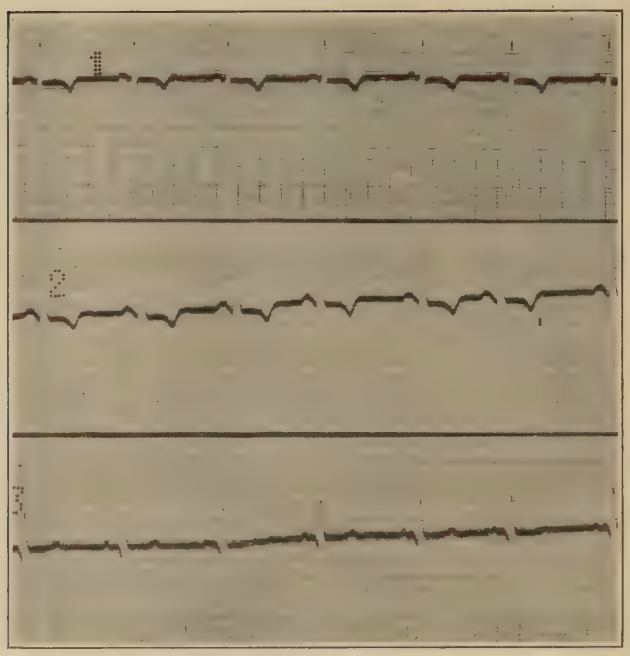

Fig. 2.—Electrocardiogram of the senile heart, showing weak left ventricle. The T wave is directed downward in leads I and II.

do before twenty. You must learn to rest and play, to live on simple food, to stifle undue ambition, and to cultivate pleasant emotions and a sound philosophy.

CONTRIBUTING CAUSES

In addition you must attend to all your focal infections, however trivial they may seem; that dead tooth with the gold cap on it and pus around its roots must be sacrificed. Those innocent tonsils must be guillotined, or at least go to the electric chair. The socalled catarrhal condition, wherever it is situated, must be treated. The skin can no longer be allowed to be a leathery covering, like the cover of an old book, but must be made into an active functional membrane, like the skin of a healthy child. The colon must be depopulated of offending germs and a new community of healthy organisms established.

If the heart is merely senile before its time, or only tired and poisoned, these things will be enough, but if permanent damage has been done and after this reformation of life and cleansing of the body has taken place there are still pains in the region of the heart on exertion, or shortness of breath without exertion, the ship which bears your health is in shallow water and you must take aboard a pilot.

Do not go to a physician when you are forty or sixty years of age to be cured of a senile heart, but go to him to have your senile heart taken care of and

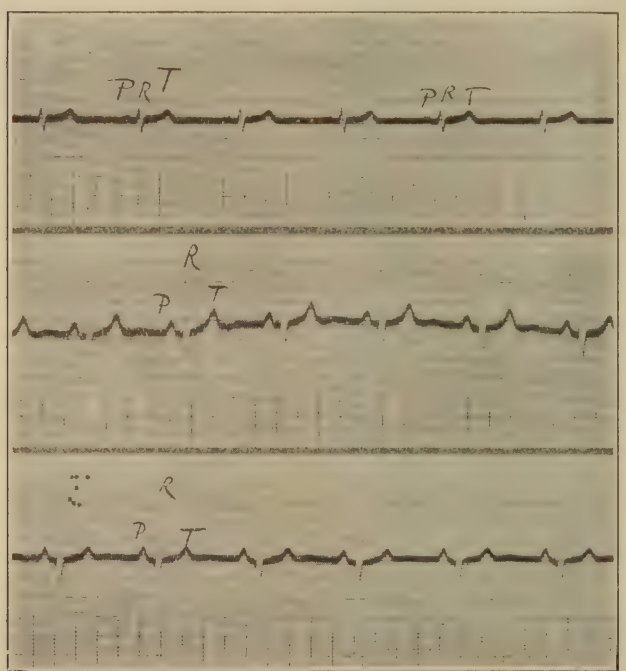

Fig. 3.—Electrocardiogram of infantile heart, showing sinus arrhythmia and relative right predominance.

Fig. 4.—The infantile heart.

to be inspected and guided at regular intervals. In this way only can you attain added years of life and comfort. You cannot get it without such help.

FREQUENT EXAMINATION

The physician who is interested in this art of helping people with senile hearts will make a complete technical examination with charts and records and will direct you to come back once a year to have new charts made and compared with the year before. If your heart is in need of a certain type of lubricant in the shape of a simple remedy, he will teach you how to take it continuously and not in the larger amounts that is urgently needed if your heart is allowed to get into serious trouble. Heart symptoms, such as severe pain becoming habitual, should be avoided, because one attack breeds another.

Not only do we encounter the too mature heart but we encounter, many times, the immature heart.

A large number of people suffer from a condition which was named during the war as neurocirculatory asthenia. This is a long name and it is used to cover a multitude of things that are not just alike. Nevertheless, it is a good name, because it is a name which recalls to the experienced physician a group of people with a particular kind of trouble. Many of these people have hearts, which either have never attained maturity, or which have relapsed together with their whole circulations into the immature type. People with this trouble have all the instability of children, with the cares and worries of age. The pulse shows a youthful irregularity of the sinus type. Their blood pressure is low as in children. Their hearts show a right sided predominance, instead of the dominant left ventricle that should be found in robust maturity.

This form of heart trouble is in contrast to the senile heart. These people may truly be said to be old people with infantile hearts.

If old age could be prescribed like a drug it would be a useful remedy to the person with neurocirculatory asthenia. If youth could be prescribed as a drug it would be the finest thing in the world for the sufferer with a senile heart. For a person is as old as the flesh of his heart and we find old hearts in young people and young hearts in old people. Age and youth blend and nobody can agree as to what age senility begins.

109 East Sixty-first Street.

Harmfulness of Caffeine and Value of Alcohol in Old Age

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SYMPTOMS OF OLD AGE

It is assumed in this discussion that the individual has normal old age and is not suffering from any localized or general disease. Briefly, the main symptoms of advancing age (the term senility means more than is here considered) are: slower and not perfectly coordinated movements; mental slowness with memory lapses and loss of words, often only momentary; forgetfulness of recent events; indifference to information given, unless extremely personal; more or less noticeable irregularities in eating and incoordination of eating movements so as to be mussy; insomnia; nocturia; morning polyuria; poor peripheral circulation; cold hands and feet and feeling cold even in ordinary temperatures; joint pains; stiffness; constipation; colon putrefaction; pyorrhea alveolaris; some dyspnea on ordinary exertion; often irregular cardiac pains; and the many symptoms of endocrine gland deficiencies.

It is not generally recognized that with the deterioration of all organs and functions with advancing age the endocrine glands are similarly affected.

Deterioration of thyroid secretion aggravates the normal tendency to general sclerosis; causes a shrinking and wrinkling of the skin; diminished perspiration and consequent dryness of the skin, frequently with tendency to eczema; and more or less mental apathy.

Parathyroid deficiency is shown by the hair becoming brittle and falling easily, the nails and teeth becoming brittle, and by an increased nervousness and irritability, due to imperfect calcium metabolism.

Suprarenal deficiency is shown by the tendency to pigmentations of the skin, black dots and brown patches, and by the loss of circulatory and muscle tone.

Gonad deficiency is shown by diminished sexual ability and general vitality, and the appearance (perhaps from this cause) of senile skin spots, warts, etc.

Pituitary deficiency is shown by the deposition of fat, by a tendency to glycosuria, by a tendency for the deposit of bone in cartilage, by the stiffening of joints, and, often, by kyphosis.

TREATMENT

The main factor in causing a socalled healthy old age is for the person to grow old gracefully. This means that he requires more rest hours a day, more days a month without physical labor or mental cares, and more vacation periods. It also means that during his hours away from business and during his vacation times he must not play strenuously. He must learn to relax, not necessarily to become sedentary, but to play golf or drive a machine moderately and not strenuously.

It is a mistake for such a person to give up his ordinary avocation, but he should confine his labors to his regular work or business, and cut out all side-issues and cares, such as committee work and responsible positions, whether they be political, civic, business, church or society.

The diet should be modified to meet the conditions of his work and his needs. Indigestion and bowel stasis, if present, should be corrected largely by diet. An evident glandular deficiency may require help and may many times be helped. Not infrequently small doses of iodine, as one drop a day for one week each month will be a good treatment. Focal infection, especially in the mouth, must be eradicated.

THE HARM OF CAFFEINE IN OLD AGE

The aging individual, whether he has low blood pressure or has been having high blood pressure (and generally it is becoming lower from the less strenuously acting heart) feels the need of stimulation. He has learned that he can get this from coffee and tea. But he also learns, in the large majority of instances, that coffee or tea taken at the evening meal, which for years has not prevented sleep, now causes him to be wakeful. At other meals or other times of the day, however, he is in-

clined to increase the amount of caffeine stimulation.

The action of caffeine is to increase general nervous irritability, cause palpitation, cause sleeplessness, cause cerebral irritability, cause polyuria, and especially to stimulate the thyroid and parathyroids to abnormally increased activity, with the result of more nervous irritability and muscular irritability and trembling. Caffeine often raises the blood pressure, when such an increase of blood pressure is not needed.

Caffeine (coffee and tea) in any form is likely to increase the production of uric acid, which in old people is especially likely to irritate the kidneys and to cause muscle and joint pains.

Therefore it is evident that, except in an emergency for caffeine therapeutic stimulation, coffee and tea can do nothing but increase the troublesome symptoms of old age.

THE VALUE OF ALCOHOL IN OLD AGE

A small amount of alcohol acts as a gentle narcotic to the brain, dilates the peripheral bloodvessels, gives a feeling of surface warmth and warmth to the extremities, and depletes the internal congestion areas, often starts a failing appetite, quiets an irritable heart, and gives a general feeling of comfort to these individuals.

Alcohol has a positive food value, and if sugar is added (unless sugar is contraindicated) a food is furnished that readily oxidizes and is of benefit to old people.

Alcohol as a heart stimulant in shock is of no value, but it is of great value as above described. Only an ignorant layman prohibitionist and a hypocritical physician will deny the value of a little alcohol in the discomforts and weakness of old age.

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The Nutrition of the Aged

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In order to arrive at a correct dietary for the aged, it is only necessary to modify the normal diet of the adult to make it suit the lessened activity and vitality of advanced years. Excesses of all kinds must be guarded against. The total quantity of food must be reduced to actual requirements; the different constituents of the dietary must not be permitted in amounts which would be harmful. An adult may indulge in a single dietary excess with little danger; habitual excesses show their effects slowly. To the aged, on the other hand, the former may be fatal and the bad effects of the latter are quickly manifested.

MORE THAN A MAINTENANCE DIET

A maintenance diet furnishes all the essential food elements in abundance. It does not necessarily, however, exclude excesses in one or more elements or in total quantity. A correct diet, therefore, being more than a maintenance diet, should include balance among the food elements and provide for a total quantity which is not excessive.

DIETARY DEFICIENCIES

A dietary may be deficient in many ways. Of course the well known proteins, fats and carbohydrates, must be present in abundance. We now recognize, in addition, that several vitamines are required to protect against rickets, scurvy or beriberi. A dietary deficient in iron is a possibility occasionally encountered. The American is more apt, however, to choose foods lacking in calcium than in iron or protein. In order to provide against such deficiencies it may be said, in a general way, that variety in the daily menu practically eliminates all such deficiencies. It does, providing that variety includes greens, coarse vegetables, fruit and milk. The milk is necessary as a source of calcium unless the helpings of the greens and coarse vegetables are very generous and these articles are regularly a part of the daily menu.

DIETARY EXCESSES

Various excesses in eating are especially dangerous for the aged. The kidneys show more or less impairment in function with advancing years. For this reason the protein factor in the diet must be kept as low as is safe. When the kidneys are incapable of keeping up with excretory requirements the heart and arteries are injured by toxins accumulated in the blood. Carbohydrates and fats, being associated with gastrointestinal fermentation and with acidosis, are sources of heart and kidney diseases. Diabetes is more common in the later decades of life. Pastry and rich desserts are to be avoided because they contain concentrated carbohydrates and fats and frequently protein (egg) and are generally taken when the individual is already surfeited with food. Overloading the stomach is one of the most dangerous things the aged can do. Seasonings of all kinds should be restricted, almost to the point of exclusion. The more simply our foods are prepared the better. All the dangers which occur to adults from dietary indiscretions are multiplied many times for the aged. Much of the sickness which occurs between forty and sixty, exclusive of contagious diseases, is due to faulty eating. Of those who do not succumb at this time, many are affected after sixty.

PROTEIN CONTENT OF THE DIETARY FOR THE AGED

The protein content of a suitable dietary for the aged should be as low as is compatible with adequacy. Here the work of Chittenden is especially valuable since he has proved that the adult can live in robust health on much less protein than we were formerly led to believe was necessary. No one should hesitate to give the aged the benefit of this information. Forty to sixty grams of protein daily is

an abundant provision for them. In a former (1) article I showed that we obtain between thirty and forty grams of protein from breadstuffs, cereals, fruits and vegetables—in other words, from articles classed not as proteins but as carbohydrates. This leaves, if the Chittenden standard is followed, a very small amount of protein to be obtained from the protein foods as such. It is evident, therefore, that very little meat is necessary to bring the supply up to full requirements. Some elderly people have acquired the habit of using meat only twice a week and they seem to do very well. To be more exact in our calculations, if we assume thirty grams (the lower figure) are obtained from the nonprotein class, then all the meat that is necessary daily will be the equivalent of a piece of beef five by three by one half inches (twenty-three grams protein). This gives a safe margin of protein for the aged. If no meat is taken, three glasses of milk will furnish an equivalent amount of protein. A piece of cream cheese, two by one by one inches (8.1 grams), one egg (6.3 grams) and one glass of milk (7.5 grams), would be equivalent to the above mentioned amount of meat. (See table I.)

COMPUTATION OF PROTEIN REQUIREMENTS WITH THE AID OF THE ACCOMPANYING MENU

The accompanying menu analysis shows a derivation of protein from some of the vegetables, grains and fruits. It would be difficult to select the protein in each article of food every time one recommended a menu for the day, but, taking this table as a standard and good average, one can approximate the protein in a menu with fair accuracy and simplicity. Starting with a knowledge of the approximate amount of protein in the nonprotein articles of a day's menu, the difficulty of the problem is reduced probably ninety per cent. Inasmuch as the reduction of the protein content of the dietary of the aged is of so great importance I will include from my aforementioned article the tables and some of the discussion used therewith. This day's menu includes eighty-three grams of protein, 35.5 of which were from fats and carbohydrates and 47.5 grams from proteins. To modify this for the aged the protein of the protein class should be reduced at least fifty per cent, especially through the reduction of meats.

The principal protein foods are meat (including chicken and fish), eggs, milk and cheese. These four are easy to remember and, after learning the short table, it will be a simple matter to prescribe a definite amount of protein. The following table shows the protein content of familiar amounts of these four foods.

TABLE I

CHIEF PROTEIN FOODS

Meat, 100 grams (.2 lb.)	23	grams
Eggs, 2	13	grams
American cheese, 3 x 1 x 1 inch	12	grams
Milk, 2 glasses	17.5	grams

A sample maintenance diet is also presented and analyzed. The diet furnishes approximately 2,400 calories which is quite sufficient for one engaged in a life not overactive, i.e., for the average adult city dweller. It is suitable for a person with a normal weight of 150 pounds. A menu is given for breakfast, luncheon and dinner. The protein content and caloric value of each article of food is indicated. The total protein drawn from the nonprotein foods as well as from protein foods is given for each meal and also for the day. In modifying this diet by reducing its protein content, the caloric value will be likewise lowered a sufficient amount.

TABLE II.

SAMPLE MAINTENANCE DIET

	Grams protein.	*Calories.*
BREAKFAST:		
Fats—		
Butter, one ball or one third ounce		80
Cream, thin, four tablespoonfuls	2	120
High content carbohydrates—		
Cereal	2.5	100
Bread, two slices, 4x4x¼ inch	4.6	140
Sugar, two teaspoonfuls		66
Low content carbohydrates—		
Orange	1	70
Coffee	no value	
Breakfast totals:		
Protein from proteins	0	
Protein from fats and carbohydrates	10.1	
Protein from all sources	10.1	
Calories		576
LUNCHEON:	*Grams protein.*	*Calories.*
Proteins—		
Eggs, 2	13	160
Fats—		
Olive oil, two teaspoonfuls		74
Butter, one ball		80
High content carbohydrates—		
Bread two slices	4.6	140
Macaroni, two tablespoonfuls	2	50
Sugar, two teaspoonfuls		66
Low content carbohydrates—		
Lettuce, one half head	1	18
Fruit, apple	.5	75
Luncheon totals:		
Protein from proteins	13	
Protein from fats and carbohydrates	8.1	
Proteins from all sources	21.1	
Calories		663
DINNER:	*Grams. protein.*	*Calories.*
Proteins—		
Meat, three tenths pound, 5x3x¾ inch	34.5	450
Fats—		
Butter, one half ball		40
Cream, two tablespoonfuls	1	60
High content carbohydrates—		
Soup, thickened	5.5	160
Bread, one slice	2.3	70
Potato, medium size	2	90
Sugar, one teaspoonful		33
Low content carbohydrates:		
Squash, two tablespoonfuls	1	40
Peas, two tablespoonfuls	5	80
Apple, one	.5	75
Dinner totals:		
Protein from Proteins	34.5	
Protein from fats and carbohydrates	17.3	
Protein from all sources	51.8	
Calories		1098
Day's totals:		
Protein from proteins	47.5	
Protein from fats and carbohydrates	35.5	
Protein from all sources	83	
Calories		2337

FAT AND CARBOHYDRATE CONTENT

The fats and carbohydrates should not be taken in sufficient quantity to cause gain in weight. This, however, is seldom done in the later years of life. The best method is to limit the most injurious of these, that is, sweets and rich desserts. They cause the greatest amount of fermentation. In this way the diet will be confined, largely, to the simple foods. Butter, three to five balls daily may be used with whole grain bread and potatoes. An ounce or two of cream may be used with fruit, or otherwise. Those inclined to overweight should also limit their amount of bread. The fresh breads and those not thoroughly done are most likely to cause fermentation. Patients suffering from hyperchlorhydria will do well to limit their high content carbohydrates at meals when they indulge in meats, since the acid gastric juice, a free flow of which is stimulated by the meat, checks

carbohydrate digestion by the alkaline saliva. Sweets and meats do not go well together.

MINERALS, ALKALINE BASES AND VITAMINES

The minerals, alkaline bases and vitamines must be included in the dietary for the aged, although the less the activity the smaller is the amount which would be required. Our knowledge has not progressed sufficiently to enable us accurately to measure these elements. When white bread, potatoes, cake, milk and cheese are eaten and the amount of greens, vegetables and meat is very low, there may be an insufficient amount of iron in the dietary. The tendency is rather to feed the aged on a vegetable diet. This provides for iron particularly if it includes the greens, such as romaine, spinach, dandelion and beet tops. If, on the other hand, they are placed on a semisoft diet without the green vegetables, they are in danger of this form of deficiency. The vegetable diet is again valuable in furnishing alkaline bases and vitamines as well as other minerals besides iron. We cannot speak with authority as to the possibility of excesses in these classes of foods. Perhaps information on this subject may be developed in the near future.

CONCLUSIONS

1. The best dietary for the aged is obtained by modifying the diet for normal adults to suit the lessened activity and vitality of advancing years.

2. By preventing excesses in meats, sweets, seasonings and the total quantity of food we avoid much sickness among the aged and add to their comfort as well as to their years.

3. We must also caution them against a single indulgence in overeating, such as they may be tempted to commit at the banquet or the Thanksgiving feast. There are many fatalities due to this cause.

4. We must provide the essential elements in the diet. A vegetable diet with some milk or cheese, perhaps meat in the place of milk and cheese twice a week, is satisfactory.

5. The protein content is determined by reference to accompanying tables. The Chittenden standard is used. Fats and carbohydrates sufficient to keep the weight are allowed, the sweets and rich desserts being avoided.

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Senile Pneumonia

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SYMPTOMATOLOGY

The symptoms of pneumonia differ widely according to the age of the patient. Often we see elderly people who are walking, working and eating as usual, suddenly collapse and die, the autopsy revealing the presence of pneumonia with suppuration. In the majority of instances this is the natural termination of advanced life. We should bear in mind that the symptoms are different in old age, the disease may present a peculiar clinical picture, and if we are not extremely careful the patient will die before a diagnosis is made. After an accident, or any disease which keeps an aged patient in bed, looms up the ever present danger of pneumonia. It sometimes follows senile bronchitis and frequently fracture of the hip. It appears also after ether anesthesia.

We do not get the classical picture of pneumonia; the fact that the patient has no febrile temperature, no increased pulse rate, often misleads us; we wait for the rusty sputum and there may be no sputum at all, no chill, no pain. Two facts alone seem to stand out: one is that the respirations are increased and the other that the patient is failing rapidly. The face is usually red and the tongue dry; the crepitant râle coarser than in the adult. Because the urine often shows albumin, many erythrocytes and granular casts, we might be led to believe that the condition was due to nephritis. Senile patients suffering from carcinoma or other incurable diseases often die of pneumonia.

Pneumonia is one of the most fatal diseases of old age and it is important to give special attention to it. There are certain anatomical and physiological differences between the lungs of the adult and those of the aged. According to Loomis, the pathological changes in old age are modified by the rarefied condition of the lungs, the dilatation and rupture of the air cells, their diminished elasticity and the obliteration of large numbers of their capillary vessels. The lungs in the aged are of an ashy gray color; the surface of the pleura is less moist than in adult life. The fissures between the lobes change their position so that in the left lung the upper lobe is in front and the lower behind, and in the right lung the middle lobe projects downward, the lower one rising behind it, forming a considerable portion of the summit of the lung; therefore, pneumonia of the apex may in reality be in the lower lobe. Microscopically, the air cells are about twice the size of normal adult lung cells.

MORBID ANATOMY

The morbid anatomy of the disease consists of three stages: a stage of engorgement, of red hepatization and of gray hepatization. Gangrene is much more frequent than in the adult type. On account of the rarefied condition of the lungs in old age small abscesses are apt to develop and we sometimes see them interspersed throughout the consolidated tissue. Larger abscesses, resulting from the coalescence of several smaller ones, are not so frequently encountered in old age. The minute bronchi are usually involved.

TEMPERATURE

An aged patient who is failing rapidly should be looked upon as likely to have pneumonia. With an

increase in the respirations and delirium, the diagnosis seems evident. The patient often hits his chest with his hands as if he were in distress. Sometimes the temperature and the pulse rate are normal; in fact, they are in many other diseases of old age; a subnormal temperature is still more common. However, temperature by rectum may show an increase to 103-104° F., but this does not come before the third day. The rate taken at the heart is often different from that taken at the radial artery and owing to the sclerotic condition of the radial arteries the pulse is unsafe as a diagnostic and prognostic sign, therefore it is always advisable to take the rate at the apex of the heart. Ordinarily, the pulse rate is more frequent than at maturity. Sometimes we find a slow pulse rate in health. Loomis asserts that the normal pulse rate for old men is from 60 to 70 a minute while in women it is from 68 to 78. In contrast to the full pulse of adults, in senile pneumonia the pulse has, normally and in disease, a fictitious hardness. A pulse rate of 120 or more may not mean danger.

AUSCULTATION FINDINGS

Sometimes the findings upon auscultation are uncertain; careful examination will reveal an area of consolidation, the râles are usually coarse. Pulmonary edema, so often encountered in old age and due to various causes, may cover the classical signs of pneumonia. If we depend upon our experience in examining the lungs of adult patients we shall be deceived greatly by the variations inherent to the lungs of aged persons. In old age, it has been noted that bronchorrhea is normal and this gives rise to mucous râles which may be present at all times in senility. The respiratory murmur may be loud at one moment and at other times difficult to hear.

COUGH

The cough may pass unnoticed and if expectoration comes at all it may appear late in the course of the disease. Violent coughing may enable the patient to expectorate the characteristic sputum. Perhaps the reason why we do not see the pathognomonic sputum more often is because in advanced life there is a rapid transition of the stages, early suppuration often occurring.

UREMIC SYMPTOMS

Early in the course of the disease the senile patient becomes semicomatose or comatose and the disease may have the appearance of uremia. The differential diagnosis is sometimes difficult because in the course of senile pneumonia the urine is often scanty, bile pigments and albuminuria are present, hyaline and granular casts and blood are frequently seen. If we are not careful this will lead us to wrongly diagnose uremia.

DIAGNOSIS

To sum up, the rapid decline of the patient, together with increased respirations and delirium, suggest the diagnosis of senile pneumonia. The condition, however, should not be confused with senile bronchitis, pulmonary congestion or pleurisy. These conditions, except pleurisy, are common in old age and are often mistaken for pneumonia. The senile patient suffering from pneumonia is usually more ill than the one who has bronchitis or pulmonary congestion; however, this is not an absolute rule, because, to repeat, we may find ambulatory cases of pneumonia, where the patient carries on until he collapses.

In old age the asthenic form of the disease is observed frequently and is characterized by insidious onset, early delirium, prostration, stupor, tendency to adynamia and collapse. Death may happen before a diagnosis is made. Again, we sometimes see a so-called typhoid state with pneumonia, this is also misleading, but we should remember that typhoid fever itself is rare in old age.

It is not always possible to type the sputum because in many instances there is none to be obtained; this may prevent the early diagnosis of the disease. Through the precipitation test, it is possible to get a reaction, thus typing the pneumococci from the urine within twelve hours after the initial chill. Ordinarily, the percentage of incidence of infection with these groups is averaged as follows (Webster): Group I, 33 per cent.; Group II, 33.5 per cent.; Group III, 12.5 per cent.; Group IV, 20 per cent. Most of our senile cases seem to belong to Group III. Because of the difficulty in obtaining the sputum for bacteriological examination, great stress should be placed upon the clinical diagnosis.

PROGNOSIS

The prognosis is always grave; the toxemia resulting from pneumonia causes extreme prostration; usually the kidneys are involved and the heart is not able to stand the strain, especially since this organ has undergone senile changes. When the disease is confined to the lower lobes, some observers have claimed that the prognosis is much better and it is more favorable when there is not delirium and when the heart action is regular. The infection itself brings about pathological changes in the heart muscle.

TREATMENT

Bedridden senile patients seldom recover. If the aged patient is able to leave his bed, we should urge him to, of course; this is not possible in cases of extreme prostration.

The physician must use his own judgment but he should remember that hope is one of the strongest psychic stimulants known. Often, when we have exhausted our therapeutic measures, the only thing we can actually do for a patient is to instill into him hope and the will to live. In old age encouragement is all the more necessary because death may have become an obsession. Too often there is no cooperation between the patient—and even the patient's family—and the physician; the patient looks upon his illness as likely to be the end. In many instances I have forced patients suffering from senile pneumonia to sit in a chair and they seemed to improve as soon as this change was made, breathing became less difficult and the circulation usually improved.

If the sputum shows it is a type I case, type I serum should be used, but early diagnosis is imperative because if the serum is not given within the first forty-eight hours of the disease, it will have little effect.

The care of the senile patient is extremely important, good nursing an absolute necessity. The

patient should be turned frequently; a liberal diet should be allowed, together with plenty of fluids. The toxemia developing during the course of pneumonia often causes death, and this toxemia should be prevented as much as possible by attention to the intestinal tract. A cathartic should be given the first day, and after that it is advisable to insist on an enema each day for the first three days. Milk of magnesia or mineral oil given every night may prove satisfactory and make enemata unnecessary but saline laxatives should be avoided as they cause depletion.

The nature of the toxemia is not at all times obvious; often the kidneys are involved and nitrogen retention is found. A nonnitrogenous diet should be given in these cases. Acidosis is also frequently present in the course of pneumonia and should be counteracted by the administration of sodium bicarbonate. However, it is necessary to estimate repeatedly the carbon dioxide combining power of the blood in order not to give the alkali too long. In other instances, the toxemia seems to be due to lack of proper elimination through the intestines. This is often caused, partly, by the previous existence of chronic intestinal autotoxemia. Furthermore, the toxemia may be due to a true pneumococcemia.

Rest is of prime importance in the treatment of senile pneumonia and this is insured by infrequent examinations at the bedside. No external applications are necessary. There should be no confusion in the sickroom or around it. The ventilation should be perfect and constant. The matter of the fresh air treatment is one which can be decided for the individual patient; if the cyanosis and respiration improve on the fresh air treatment, it may be advised.

The question of oxygen administration is still open to discussion. Perhaps in some instances it is valuable and we should always be prepared to administer it if we have to. At least forty per cent. oxygen should be used and this should be given by means of the rebreathing apparatus.

Digitalis should be prescribed early in the course of the disease, beginning when there is slight arrhythmia, cyanosis and edema. One to two drams of the tincture may be given in twelve hours. Some clinicians use digitalis at the onset of the disease. The toxemia due to pneumonia weakens the heart muscle and it is thought that cardiac dilatation occurs less frequently under digitalis medication. Quinine often gives satisfactory results in old age and one grain every three hours may be used if urinalysis is normal.

Whiskey should be given as a food and its full physiological effect should be obtained. One half ounce every two or three hours, until a red spot appears on each cheek, may be given, especially as long as the tongue remains moist. A dry tongue in the course of whiskey administration usually indicates that it is harmful (Sydney Ringer). Morphine and antipyretics are usually unnecessary. Turpentine stupes and glycerine enemata will relieve tympanitis, if not severe; when this symptom is acute, pituitrin hypodermically is indicated.

Strychnine should be given because of its effect on the bloodvessels, and it should be prescribed on the third or fourth day of the disease. At first one sixtieth grain should be given every three hours, increased to one thirtieth grain at the time of the crisis. Oil of camphor may be used hypodermically when quick action is required; the effects of camphor are not lasting, but some believe it is of value in toxic conditions. Adrenalin may be given, however, we should not wait for extreme vasodilatation before giving it. Cardiac exhaustion, evidenced by increase in the pulse rate and lowering of blood pressure, calls for adrenalin.

The pulse, in old age gives little indication for treatment, because a pulse of good quality may not indicate good circulation while with auricular fibrillation the circulation may be good. Auricular fibrillation frequently accompanies senile pneumonia and in treating this condition, we usually find digitan satisfactory.

PREVENTION

Thus far nothing has been said about the preventive treatment of senile pneumonia. Among the predisposing causes of infection, chilling of the body surfaces affecting the circulation in mucous membranes, is important. Rosenow has also shown that chilling may increase the pathogenicity of bacteria in the tissues. The removal of focal infection, especially in the tonsils or nasal accessory sinuses, is a valuable prophylactic measure. Warm clothing should be worn and fatigue avoided. Care should be taken not to expose the aged to socalled colds or influenza. In a home where there are aged people, persons suffering from respiratory infections should be isolated. In treating accidents, such as fractures, sprains, etc., when the patients are in bed, we should see that they are turned on their sides several times a day in order to prevent pulmonary hyperemia.

SUMMARY

1. Pneumonia presents a peculiar clinical picture in senility.
2. The ambulatory type is sometimes observed.
3. Pneumonia is a natural termination of an old person's life.
4. Senile patients seldom have fever or increased pulse rate; increase in respiration, prostration and delirium point to pneumonia.
5. Senile pneumonia should not be mistaken for senile bronchitis or pulmonary congestion.
6. The asthenic form of pneumonia is frequently seen in the aged.
7. Difficulty of typing pneumococci is encountered because there is often no sputum.
8. The prognosis is always grave.
9. Keep senile pneumonia patients out of bed whenever possible.
10. Good nursing, liberal diet, plenty of fluids and rest form the basis of treatment.
11. Catharsis to prevent toxemia.
12. Presence of nitrogen retention and acidosis common.
13. Rest of prime importance; infrequent examinations, digitalis, whiskey and strychnine advised.
14. Preventive treatment: warm clothing; no chilling of body surfaces; removal of foci of infection; avoid exposure to common colds; turn patient several times a day when in bed as a result of fracture, etc.

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Decrescent Arteriosclerosis

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Arteriosclerosis is a complicated process and one about which there still is much to learn. Consequently, its clinical manifestations are not always clearly understood, and the term itself is often applied loosely to conditions to which it bears no relationship. Arteriosclerosis itself has been best defined by Jores, who states that "Arteriosclerosis is a complex process in which degeneration and compensatory regenerative hyperplasias of the vessel wall are closely associated. It leads to dilated and tortuous arteries, the inner layers of whose walls become thickened either diffusely or in circumscribed areas, in which lipoid, hyaline and mucoid degenerations, as well as calcification, may occur at one and the same time."

In spite of innumerable painstaking and ingenious experiments, the causes of this obscure malady are still unknown, although a few leads have been discovered which may, however, be interpreted in only the most general way. The two chief influences at play in the causation of arteriosclerosis are, first, mechanical stress, and, second, metabolic disorders. Many observations point to the importance of mechanical moments in the evolution of arterial disease. As illustrations, we may use the peculiar and characteristic localization of the early atherosclerotic lesions in the aorta about the mouths of the intercostal arteries; just above the semilunar valves, and at the convexity of the aortic arch—all places which we may presuppose are subject to particular stress and strain; the occurrence of localized sclerosis in vessels of a limb which has been subjected to unusual and persistent muscular work; the development of sclerosis of the pulmonary artery in patients with increased pressure in the lesser circulation (mitral stenosis, emphysema). By analogy it has been supposed that, with advancing years, although the stresses to which the vascular system is exposed may not be exaggerated, the aging heart and vessels experience even the ordinary demands of daily existence as an overload, and react in the same way as do vessels which are subjected to abnormal strains.

The belief that metabolic disturbances may influence the development of arteriosclerosis depends on the fact first demonstrated by Anitschkow, that cholesterin feeding will produce arteriosclerosis in animals. It has further been shown that mechanical moments acting at the same time influence the location and extent of the atherosclerotic lesions. Infectious diseases are factors in the development of arterial lesions most probably through their effect on the cholesterin metabolism.

Yet it must be repeated that the detailed application of these general principles still escape us. For example, every attempt to demonstrate in patients with arteriosclerosis a disturbance of the cholesterin metabolism, as evidenced, for instance, by abnormally high figures for the blood cholesterin, have failed. Overeating, especially of nitrogenous food, alcohol, tobacco, are all generally listed among the causes of arteriosclerosis, but there is no direct evidence supporting this assumption. Of the exogenous poisons, lead is the most important one for which a causal relationship to arteriosclerosis has been established.

In this presentation we shall confine ourselves to disease of the larger vessels of the body, but leave out of consideration the delicate fat deposits in the intima which may occur in the very young. Disease of the arterioles, the socalled arteriolosclerosis, while it may be explained by the same general principles that we have detailed above, is fundamentally different in its clinical manifestations. It is invariably associated, and most probably the consequence of hypertension, and by and large it occurs at an earlier age period than arteriosclerosis of the larger vessels.

This voluntary delimitation of our field leads at once to a consideration of the relationship between arteriosclerosis of the larger arteries and high blood pressure states. It must be clearly and definitely understood that the weight of evidence points to the fact that large vessel sclerosis and hypertension bear no causal relationship to one another, although not infrequently they may be associated in the same individual. This idea is hard to uproot, although it has been repeatedly combated by various wellknown clinicians. Sir Clifford Allbutt has been one of the chief champions of the doctrine of the independence of arteriosclerosis and hypertension and he has attempted to clarify the subject by designating those cases of arterial disease which occur in older individuals and which are unassociated with hypertension as decrescent arteriosclerosis. Careful observation by the physician in his daily practice will confirm the correctness of these views. Another significant fact which clearly differentiates hypertension from large vessel sclerosis is the varying age incidence of the two affections. Hypertension occurs chiefly in the years from forty-five to sixty-five; significant large vessel sclerosis is found predominatingly in patients above the age of sixty-five.

Arteriosclerosis does not involve all of the arteries of the body to an equal extent in every patient. Indeed, the distribution of the lesion varies greatly in different individuals. The following table from Brooks gives a general idea of the frequency with which the lesions are found in the several regions of the body. In all but thirty cases lesions were found in the arteries of more than one viscus.

	No. of Cases
Total	400
Aorta	301
Visceral trunks	368
Coronary arteries	270
Brain	132
Kidneys	81
Pancreas	74
Liver	43
Spleen	35
Celiac axis	19

The symptoms of arteriosclerosis depend on the diminution in the blood supply of the part affected. This may be of varying degree. At first there is no interference with function, but as the arterial disease progresses, a time comes when the blood supply to a given part is no longer adequate during moderate functional activity, although it may suffice when the part is at rest. Thus arise symptoms such as intermittent claudication of the limbs, which appear only on effort. As the pathological process progresses, and as gradually complete vascular occlusion occurs in limited areas, tissue death with fibrous replacement occurs. This is seen in the various viscera, particularly in the heart and kidneys, and in the brain. Thrombosis of a larger vessel may suddenly cause loss of function of a larger area, as happens not infrequently in the cerebral arteries.

DIAGNOSIS

The diagnosis of visceral disease due to arteriosclerosis is always difficult, and can usually be only presumptive. The explanation of symptoms or of disease in elderly individuals by the use of the terms general arteriosclerosis or cerebral arteriosclerosis is more often than not unjustified. Unfortunately, the visceral arteries are not accessible to the palpating finger, and their calcification can rarely be demonstrated by the röntgen ray. Moreover, careful study of necropsy material has shown that hardening of the peripheral arteries, such as the radial, which are accessible to physical examination is not necessarily paralleled by similar involvement of the visceral branches. Brooks, for instance, found that of his four hundred cases of arteriosclerosis proven at autopsy, only 154 were capable of clinical diagnosis. Furthermore, in eight of the cases there was marked peripheral arteriosclerosis, while the central vessels were absolutely intact. The diagnosis of arteriosclerosis of any particular organ, therefore, must be made with great caution, and only after every other possible pathogenic agent has been excluded. The age of the patient is of great weight. After the age of sixty-five the correctness of the diagnosis becomes more and more probable. In individuals under the age of fifty there must be widespread evidence of arterial disease, and possibly a history of familial predisposition to justify the diagnosis.

SYMPTOMS

The symptomatology of arteriosclerosis depends on the regions of the body that happen to be affected and can, therefore, be discussed to advantage under the heading of the various organ systems.

GENERAL ARTERIOSCLEROSIS

This is the diagnosis most frequently encountered and the one that is most open to question. If an elderly individual presents evidence of thickened and tortuous superficial arteries such as the radials, temporals, femorals, his symptoms, whatever they may be, are often attributed to arterial disease. While it is true that at times this may be correct, not infrequently the arterial disease cannot be held responsible. In the aged, widespread calcification of the superficial vessels may be manifest for years without giving rise to any symptoms, and without causing any distress. Arterial disease of equal extent in a younger person, on the other hand, is of grave import, for it signifies a rapid and progressive lesion. One of the reasons why the aged are often so little troubled by their arterial disease is the fact that they place such light demands on their cardiovascular system. They are retired from active life and engage in little physical exertion. The same person placed in a position in which he would have to undergo severe physical strain would probably manifest symptoms of functional insufficiency of one or more of his organ systems. So long as there is no serious impairment of blood supply to any of the important viscera, the patient is little disturbed by the senescence of his arteries. Rarely one sees such a person undergo a rapid and progressive cachexia, the so-called arteriosclerotic cachexia, which leads to an early death. Such an event can justly be attributed to general arteriosclerosis, for there may be no indication of any visceral insufficiency; it is rather a rapid wasting away of the whole organism.

BRAIN

Cerebral arteriosclerosis gives rise to a very familiar picture. The forgetfulness, the headache vertigo, fatigue, and somnolence of the aged is often traceable to advanced disease of the cerebral arteries. In time the picture may progress to that of complete mental deterioration, with returning childishness, incontinence of bladder and rectum, and the loss of all former standards of cleanliness and decency. Disturbances of mental equilibrium with fits of laughter and weeping are very characteristic. These general symptoms ordinarily come on insidiously without evidence of sudden vascular insults and are attributable to many small areas of cerebral softening consequent on vascular obliteration without actual apoplexy. More often thrombosis of one of the cerebral vessels, particularly of the branches of the middle cerebral artery, occur. In such cases there is evidence of a definite apoplectic stroke with resulting hemiplegia. In contrast to the apoplexy from rupture of a blood vessel, which is usually associated with hypertension, the onset of symptoms is often gradual, stretching over twelve to twenty-four hours. Isolated monoplegias and aphasias are distinctive of thrombosis rather than of hemorrhage. These patients frequently present the syndrome of pseudobulbar palsy, with incomplete bilateral hemiplegia and disturbances in phonation, deglutition, and, at times, of respiration.

HEART

Heart disease, following sclerosis of the coronary arteries, is extremely common, but is often difficult of diagnosis. It is rare to find in older patients who come to autopsy coronary vessels that are free from some degree of sclerosis, but the correlation between the degree of insufficiency of the heart muscle and the exent of the anatomical lesions is not close. Failure of the heart must be determined just as much by invisible metabolic or chemical perversions as by the visible lesions that present themselves at necropsy. Many patients with myocardial degeneration consequent on gradual closure of the coronary arteries exhibit no symptoms of cardiac disease during life. In others pallor, general weakness and ready fatigue are the only observable symptoms. The facies are

often characteristic—an earthy pallor with an expression of sorrow or pain.

With greater involvement of the heart muscle signs of myocardial insufficiency become manifest. At first palpitation, precordial oppression, and dyspnea on exertion are the presenting symptoms. Swelling of the feet, congestion of the lungs and liver, and the other signs of advanced myocardial weakness may make their appearance. Nocturnal dyspnea is often distressing. The attacks may be very severe, resembling bronchial asthma. In the intervals cough and wheezing in the chest may be the chief complaints. In examining the patient the determination of the absence of evident causes for the heart failure is more important than any one positive sign. There may be no valvular lesion, there is no history of rheumatic fever, no evidence of syphilis, and the blood pressure is often normal. The heart may be enlarged, a systolic murmur is often heard at the apex due to a relative mitral insufficiency, or to an arteriosclerosis of the valve. In the late stages of the disease gallop rhythm is common. A systolic murmur at the second right interspace and a widening of the area of aortic dulness may indicate the associated presence of an ateriosclerotic dilatation of the aorta. The heart impulse is feeble in contrast to the full pulse. The latter is due to the inelasticity of the arteries. Arteriosclerosis of the peripheral arteries may or may not be manifest.

DISORDERS OF RHYTHM

When the scars involve the conducting system of the heart disorders of rhythm appear. Of these, auricular fibrillation and premature beats are the most frequent. Often the fibrillation is slow because of a concomitant heart block which prevents most of the auricular impulses from reaching the ventricles. In such cases the irregularity adds little to the gravity of the case. Heart block, complete or partial, and the Stokes-Adams syndrome are relatively uncommon in this form of heart disease. Block of the ramifications of the conducting system, which can be detected only by the electrocardiograph, however, is not at all unusual and gives the best objective evidence of myocardial degeneration. Alterations in the electrocardiogram often give the only objective clue to this lesion. It is in these patients that tracings described as arborization or intraventricular block are most often encountered. Such electrocardiographic evidence associated with the clinical picture is of great assistance in diagnosis, although it must be remembered that these abnormal tracings give evidence only of disturbances in the finer ramifications of the conducting system of the heart and do not indicate the nature of the pathological lesion.

The clinical picture that has just been described is associated with a slow insidious closure of the branches of the coronary arteries. Sudden closure, due to thrombosis, results in more violent and dramatic symptoms. In many of these patients the above symptoms precede the acute insult for a variable period. On others the coronary attack descends like a thunderbolt from a clear sky.

The cases fall in several clinical groups. In one death is almost instantaneous, often painless and peaceful. The diagnosis can be only presumptive, based on the previous symptomatology, and on the knowledge of the frequency of this occurrence in older individuals. In the second group of cases severe pain of the nature of angina pectoris, associated with symptoms of profound shock, followed by death in several minutes or hours, characterize the attack.

THE ATTACK

The charactertistic feature of the attack is its sudden violent onset. In some cases there may be premonitory symptoms, such as dyspnea and tightness in the chest for days and weeks preceding the seizure, but in others there is no warning. The patient, who is usually beyond middle age, is seized with a violent constricting retrosternal pain, which may remain localized or may radiate to the left arm or to the neck and cheek. Not infrequently the pain is epigastric and with this there may be some rigidity of the upper abdominal muscles. This, in association with the frequent occurrence of vomiting or meteorism, may lead to the mistaken diagnosis of a perforated gastric ulcer or some other acute abdominal condition. Indeed, most deaths from socalled acute indigestion are due to coronary closure. With the pain the symptoms of shock make their appearance. The skin assumes an ashy pallor, there is a cold sweat, the pulse is feeble. The patient experiences a sense of impending dissolution. The mind usually remains clear.

The heart sounds are weak. This is due in part to the enfeebled heart action, in part to the acute emphysema of the lungs, which so commonly occurs with the attack. In many cases a friction rub may be heard giving evidence of the localized pericarditis that so frequently overlies the area of cardiac infarction. The pulse is small and thready and may be irregular due to extrasystoles or to heart block. Some cases exhibit paroxysmal ventricular tachycardia with a pulse rate from 170 to 250 a minute. Electrocardiographic studies may give curves corresponding to those described under myocardial degeneration. The blood pressure is low. In addition to the signs of emphysema the lungs show râles at the bases. Dyspnea is a common feature. The liver enlarges. Fever and polymorphonuclear leucocytosis are usual and add to the difficulty of distinguishing these cases from acute surgical accidents.

The outcome of the attack is variable. Some patients rapidly succumb. Others may survive several hours or even days, and a few may recover from the attack. In those cases in which death is not immediate the suffering of the patient may be terrible. This is the real status anginosus with excruciating heart pain lasting many hours. The patient is afraid to move for fear of increasing his anguish. In some cases with violent onset the pain gradually recedes, but the patient is left weak and exhausted and in dread of renewed attack. Death, if it does not come in a paroxysm of pain, is due to progressive heart failure. The pulse becomes weaker and more thready, Cheyne-Stokes respiration sets in and life is gradually extinguished. Recovery, if it occurs, is slow and may be cut short by a renewed seizure. The first attack of coronary thrombosis almost invariably involves the left coronary artery, usually its descending branch. When a second one occurs, be the interval one of days or months, it is fairly safe to

hazard the guess that it is conditioned by a like involvement of the right coronary vessel.

The few patients who recover may be restored to comparative health and may lead a fairly active life before a second attack or a rupture of the heart determines the end.

AORTA

Arteriosclerosis of the aorta is extremely common. The process involves not alone the arch and the thoracic portion, but very frequently extends to the abdominal aorta. These patients may be classified into those in whom there is simple involvement of the aorta, those in whom the process has involved the aortic valves as well, and those in whom the coronary arteries are encroached upon.

Advanced sclerosis of the aorta results in dilatation and lengthening of the vessel. This is evidenced by increased dulness in the first two interspaces to the right of the sternum, by pulsation in the jugular notch, and by pulsation of the subclavian artery above the clavicle. The heart is not enlarged, the second aortic sound is accentuated, and there is usually a systolic murmur audible at the aortic area. Radiographic examination may reveal, in addition to a widening of the transverse diameter of the aorta and an elevation of the arch, definite shadows of calcified plaques.

When the semilunar valves are included in the atherosclerotic process the symptoms and signs of aortic insufficiency are superadded. Aortic stenosis may develop in contradistinction to syphilitic disease. When the orifices of the coronary arteries are sclerosed attacks of angina pectoris may occur. When this happens the prognosis becomes grave. Either the patient dies from acute coronary closure, or else the impaired nutrition of the heart muscle and the frequent closure of smaller branches of the vessels cause myocardial degeneration, with progressive myocardial insufficiency. The myocardial lesions may cause cardiac irregularity. Auricular fibrillation is the most frequent arrhythmia encountered.

Arteriosclerotic disease of the aorta is of slow development and often causes few symptoms. Even when aortic insufficiency develops, they may be insignificant. Coronary artery disease is the most frequent cause of distress in these patients. But even in these cases we have learned that if the occlusion of the vessels is a very gradual one, large areas of heart muscle may be destroyed without causing the patient very great inconvenience. The anastomoses of the coronary arteries, in particular the fat vessels in the epicardium, are able to carry on a circulation sufficient to the restricted needs of the individual.

Death comes from myocardial insufficiency or from intercurrent disease.

The loss of elasticity of the aorta has an important effect on the dynamics of the circulation and results usually in the elevation of the systolic blood pressure with little change or, at times, even with a lowering of the diastolic pressure. The common reading in this condition would be 160/80 or 145/70. Such readings must be clearly differentiated from true hypertension, in which the diastolic pressure is always elevated and which is associated with sclerosis of the finer arterioles.

KIDNEYS

Arteriosclerosis of the larger branches of the renal arteries gives rise to gross scarring of the kidneys, but not to the typical granular kidneys. Not enough kidney tissue is destroyed seriously to impair their function, and consequently no symptoms of renal insufficiency are apparent. The lesion therefore is of no clinical importance and cannot be diagnosed.

GASTROINTESTINAL TRACT

Disorders of digestion resulting from interference with the blood supply of the intestinal tract have been described by various authors, but the relationship between symptoms and anatomical lesions has not been conclusively demonstrated.

Ortner has described attacks of meteorism with nausea and vomiting occurring after meals and lasting several hours, which he attributed to sclerosis of the mesenteric arteries and which he called *dyspragia intermittens angiosclerotica intestinalis*. Other authors have included in this general symptom complex the lesser forms of indigestion in elderly individuals with arteriosclerosis and have likened them to attacks of intermittent claudication of the extremities. It is supposed that the diseased mesenteric vessels do not furnish an adequate blood supply to the intestines during the process of digestion. Thrombosis of the mesenteric artery, which, fortunately, is uncommon, may definitely be attributed to arteriosclerosis of the vessel.

EXTREMITIES

Arteriosclerosis of the vessels of the extremities is readily recognized. One must be careful, however, to distinguish between an artery that is spastically contracted, and which therefore feels thick, and one that is thickened by disease. The spastic vessel will undergo variations in calibre at different times and can be relaxed by placing the member in hot water. Thickening of the peripheral vessels may exist in all degrees from one so slight that it can barely be appreciated, to complete calcification and incompressible rigidity. It is in the peripheral vessels, particularly in those of the lower extremity, that Mönkeberg's medial calcification is so often found. This can be beautifully represented by means of the röntgen ray. It is only rarely that it causes the patient any disability. The most characteristic symptoms of sclerosis of the vessels of the extremities are those of intermittent claudication. On walking the patient experiences severe pains in one or both of his legs, which compel him to rest. After a short period of inactivity the pains disappear but recur when the limb is again exercised. Physical examination may reveal thickened femoral or popliteal arteries which may show evident calcification on the röntgen plate. In other cases pulsation of the posterior tibial or dorsalis pedis vessels cannot be felt.

Not every case with advanced sclerosis of the arteries of the leg presents these symptoms, and it seems probable that anatomical narrowing of the arteries alone will not account for the intermittent pain. It is suggestive, as was pointed out by Erb, that these symptoms are more common in nervous persons, particularly in those with a labile vasomotor

system. It seems likely that a spasm of the vessels is an additional factor in the production of the syndrome. This view is supported by the fact that during the attack blanching and coldness of the affected limb occur, and disappear with the relief of the pain.

With more advanced arteriosclerosis of the arteries, particularly in that form known as endarteritis obliterans, gangrene of the toes or even of the leg may appear. This gangrene may be initiated by trauma, or may be associated with a general disturbance, such as diabetes mellitus.

TREATMENT

Therapy in arteriosclerosis can be only symptomatic. There is no known form of treatment that will control the progress of the arterial lesions. On general principles it is wise to plan a quiet temperate life for the patient. No particular dietary restrictions beyond moderation, with a tendency to undereating rather than overeating, are indicated. Medicaments such as potassium iodide are without effect. Beyond this, attention must be directed to the various organ disturbances which must be handled symptomatically. For the cerebral manifestations little can be done. It is most important following an apoplectic seizure to reeducate the patient as soon as possible, and to teach him to walk again before advanced contractures render his limbs useless. In the treatment of arteriosclerotic heart disease, the general principles of cardiac therapy are employed.

Symptoms due to sclerosis of the arteries of the extremities must be treated conservatively. Rest is all important, and in association with this elevation of the affected limb is often of benefit. Hot air baking of the limb should never be employed, for it often initiates gangrene. Of the physical methods of treatment diathermy is the most valuable. In selected cases, Leriche's operation of periarterial sympathectomy may be indicated. With the onset of gangrene expectant treatment should be followed as long as possible, for often, particularly in dry gangrene, a clear line of demarcation forms, the gangrenous portion is cast off and healing takes place. If operation becomes necessary, the amputation should be well above the site of vascular occlusion.

Local and Regional Anesthesia in Operations Upon the Aged*

A Review of One Hundred Operations

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In a recent editorial, entitled Old People, Dr. Frank Crane remarked: "Just being old is one way to attain distinction. It is hard work, but it can be done if we stick to it long enough."

Humboldt, in the course of his travels, was present at the funeral of a Peruvian called Hilario Pari, who had passed the age of one hundred and forty-three years. Up to his one hundred and thirtieth birthday, this vigorous old boy walked every day, some three or four leagues at a lively pace, which worried the younger men, and they apparently had a hard time to keep up with him. And then, of course, there is Methuselah—but that is another story.

The aged person who must become the subject of operative surgery is also another story—at least to the surgeon who operates. The problems and pitfalls attending all operative work are complicated and intensified, when we must deal with a patient past middle life—no matter how strong and vigorous he may appear to be. And the greater the decline of his powers, and the more marked the advance of senility, the more difficult will the solution of the problem become.

Walter Brickner, in an editorial in *The American Journal of Surgery*, writes: "Some patients at seventy are feeble, physically and mentally, as many at ninety, and on the other hand, some people at eighty are as vigorous and heathly as the average at seventy. We should therefore consider as aged those who are very old in their tissues and functions, no matter how old they may be in years." Thus the surgeon's problem is still further complicated, for not infrequently he must detect in those still relatively young in years, "the tissues and functions" of the aged, and guide his procedure accordingly.

There are many patients whose treatment by surgery is imperative, upon whom the use of a general anesthetic is absolutely contraindicated. When shock or other cause has greatly lowered the vitality, or kidney or heart affections are present, the additional strain of general anesthesia is sure to prove fatal, and in old age we are very likely to find conditions which are quite as effective drawbacks to the use of a general anesthetic.

In operating upon old people, we should keep in mind their lowered resistance and poor tissue vitality. Any such operation should always be regarded as a serious undertaking, and the prognosis should be very guarded if general anesthesia is to be administered. The operative risk is now considered far less, if local or conduction anesthesia is used. The advantages of this method are selfevident and are manifested in many ways.

Until recently, the method of infiltration and block anesthesia was looked upon by many surgeons as such a complicated and difficult procedure, that it was rarely used in major operations. But this reluctance, on the part of some surgeons, served to give many of the less intensively conservative, a most unusual opportunity to concentrate their efforts and

attention upon this new field of surgical anesthesia, so that today, local and conduction anesthesia is being administered with marked success in many major operations.

Since cocaine has been replaced by the newer synthetic compounds, possessing relative nontoxic properties, the use of infiltration and regional anesthesia has become the method of choice in operations upon the aged. The more serious surgical conditions arising in old age, once believed to be inoperable and absolutely hopeless, because of the risk and danger of general narcosis, can now be remedied, the pains and sufferings of old people which require surgical relief need no longer go without alleviation, and the duration of life can very frequently be greatly extended by the surgeon's aid.

Strangulated hernia is a condition that is not infrequently present among elderly people—a hernioplasty under local or regional anesthesia is usually carried out successfully if the strangulation is less than six hours' duration.

Even though local anesthesia is still in its infancy, it is rapidly supplanting general anesthesia in major operations upon the aged. The gratifying results both to the patient and the surgeon have prompted some operators to extend this form of anesthesia among young patients in whom ether narcosis is contraindicated. Notable advances in this work have been made by Allen, Corning, Crile, Cushing, Halstead, Hertzler, Labat and Matas of this country, as well as Barker, Braun, Finsterer, Hirschel, Recleus, Schleich and others abroad. Men of this calibre, as the result of their vast experimental and clinical experience, developed especial skill in the administration of infiltration and regional anesthesia, are steadily becoming more proficient in their technic and more certain in their results.

RADICAL OPERATIONS UNDER REGIONAL ANESTHESIA

1. Allen and Matas, in referring to local and regional anesthesia, lay special stress on the success that they had obtained in the invasion of the newer fields of surgery. With block and infiltration anesthesia, they were able to do radical operations on the tongue, resections of the jaw, thyroid and larynx. Amputations of extremities, resections of joints, thoracotomies and hernioplasties were also successfully performed. In fact, the entire domain of genitourinary, rectal and a considerable amount of abdominal and pelvic surgery became amenable to the new methods.

ABDOMINAL OPERATIONS UNDER INFILTRATION ANESTHESIA

2. Robert E. Farr, of Minneapolis, who recently related his experience in nearly two thousand operations under local anesthesia, says that he considers the direct infiltration method an ideal one in abdominal surgery. With this process he was able to perform eighty per cent. of all the abdominal operations that came into his hands in the past six years. That the administration of general anesthesia, in skilled hands, is an absolutely safe and harmless procedure, is an assertion sometimes uttered by an overenthusiastic or inexperienced general anesthetist or surgeon. No matter how carefully or skillfully general narcosis is given, there is always the danger of unforeseen complications, and sometimes accidental death, which may be attributed directly or indirectly to the effects of the ether, chloroform, or nitrous oxide used to obtain anesthesia.

RECTAL OPERATIONS UNDER ETHER ANESTHESIA

3. W. O. Hermance, of Philadelphia, reports six thousand rectal operations with ether anesthesia, without a single death or without having to resort to resuscitation. Not very long ago one of our anesthetists of this city claimed to have administered forty thousand ether anesthesias without a casualty. If I were asked to venture an opinion regarding these remarkable assertions of general anesthesia I would say that the Lord was unusually kind to these gentlemen.

MAJOR OPERATIONS UNDER GENERAL ANESTHESIA

4. J. F. Baldwin, of Columbus, reported that, with the use of nitrous oxide in major operations, death occurred at the rate of one in one hundred cases. We must remember that death from gas poisoning comes on suddenly and without warning. Capillary bleeding is also more profuse and sometimes uncontrollable. Muscular relaxation is not obtained when nitrous oxide is given alone, and ether is generally added to produce this effect. John B. Deaver was correct, when he described this combination as ether anesthesia masquerading as a gas anesthesia, the ether doing the work and the nitrous oxide getting the credit.

Nearly every surgeon will have to admit, that during his experience, one or more untimely deaths have occurred with the use of general anesthesia. No definite accounting can be given for these accidental deaths, and it becomes questionable as to whether the anesthesia is directly or indirectly responsible. It is, therefore, important to study the remote effects of chloroform, ether, or nitrous oxide.

We know that chloroform and ether play an important rôle in the production of acidosis, but aside from this dangerous complication, there are the unpleasant after effects that are so well known to all of us.

The great danger of chloroform narcosis is self-evident, so much so that it was abandoned long ago in many of our hospitals. When death takes place, it usually occurs during the primary stage of chloroform anesthesia, yet how often do we hear physicians say that they use chloroform as a preliminary to ether anesthesia. This, in my opinion, is a great hazard to the patient and should not be practised. We must also not overlook the deleterious effects of ether and chloroform.

Nitrous oxide in recent years has gained many supporters, but gas anesthesia must be looked upon as a respiratory depressant and a dangerous anesthetic in unskilled hands.

While it is true that a longer time is consumed in operating under local anesthesia, at the same time we must keep in mind the fact that the question of safety is far more important than that of time. Many surgeons, having limited experience with infiltration, block, spinal and sacral anesthesia, are sometimes ready to abandon or condemn these methods, because they have failed to produce complete anesthesia in

some cases. They evidently do not realize that a longer time is necessary in operating; that a more refined technic must be developed when these methods are used; and that the minutest anatomical structures must be handled with the greatest amount of care.

The surgeon is therefore compelled to work more slowly, soon realizing that he must manipulate the tissues with painstaking accuracy and dexterity.

DANGERS OF GENERAL ANESTHESIA TO OLD PEOPLE

5. Labat rightfully says that the patient is frequently autointoxicated to such an extent that the normal metabolism and the oxygenation of the blood are greatly altered, thereby interfering with the essential requisites of any general anesthesia. In such cases, the advantages of regional anesthesia are obvious, since its main effects are limited to a relatively small region of the body, leaving intact the central nervous system, on the integrity of which depends the continuance of all the vital functions.

Before operating upon elderly subjects, we are in the habit of asking ourselves the following questions: First—What risk is there of anesthesia pneumonia? and second—How great is the danger of cardiac failure or kidney insufficiency? Would not the patient's chance of recovery be assured if these and other known dangers attending general narcosis could be avoided, if not altogether eliminated, through the use of a safer anesthetic? Alarming complications often occur after operations upon the aged, and we must always consider them before any particular type of anesthesia is selected. We should, therefore, choose the method least dangerous to life, and at the same time productive of the most satisfactory results.

In some parts of Austria and Germany local and regional anesthesia is now the method of choice in the performance of major surgery. So thorough has been the education in its use, that it has become a matter of routine procedure in some of the larger gynecological clinics of Vienna and various other countries.

LOCAL ANESTHESIA NOT SUITABLE IN ALL CASES

6. Finsterer of Vienna has done extensive abdominal operations in aged subjects, with entire success. In fourteen resections of the small intestine, upon patients sixty to eighty-two years of age, he had only one death, most of the patients having been previously refused operation by surgeons working only under general anesthesia.

A careful psychic study of every individual case should be made prior to operations. We admit that all cases do not lend themselves to local and regional anesthesia. The highly neurotic, excitable patient, as a rule, is not a desirable subject for this method. Those of phlegmatic type on the other hand, who have implicit confidence in the surgeon, are ideal cases for operation under these conditions.

Patients of any age on entering a hospital are likely to be apprehensive, and in a state of lowered resistance; the preparations for operation are often exhausting, and the psychic state which is reached before the operation is actually begun is often such as to greatly increase the surgeon's difficulties and actual danger to the patient. The surgeon should make it his business to reassure the patient, and to gain his confidence, to the extent of placing reliance upon the assurance that everything possible will be done for his comfort and relief. The family physician is the surgeon's greatest aid in maintaining this relation to the operative patient, and I have always found his cooperation invaluable. A timely warning of the existence of a food allergy for oatmeal, of which I was, of course, wholly ignorant—once saved me from producing a severe anaphylaxis in a recently operated patient, and on another occasion, the family doctor's knowledge of his patient's idiosyncrasy against morphine served an equally timely purpose.

STATISTICS

Since January, 1909, I have performed three hundred and twenty-six major operations under local and regional anesthesia. Of this number, one hundred were done on patients sixty years of age and over.

Number of Operations.	*Type of Operations.*	*Method of Anesthesia*
1	Carcinoma of lip (plastic)	Block
1	Thyroidectomy	Local
2	Excision of cervical glands	Local
2	Excision of carbuncle	Block
1	Excision of axillary glands	Local
5	Thoracotomy	3 Paravertebral 2 Local
2	Cholecystostomy	Local
1	Cholecystectomy	Local
1	Gastroenterostomy (carcinoma of stomach)	Spinal and Local
2	Appendectomy	Local
3	Intestinal obstruction	Local
3	Colostomy	Local
2	Sigmoidectomy	1 Spinal 1 local
1	Exploratory laparotomy (carcinoma of stomach with metastasis in liver)	Spinal and Local
2	Umbilical hernia	Block and local
7	Umbilical hernia (strangulated)	Block and local
1	Umbilical hernia (strangulated resection of small gut)	Block and local
2	Umbilical hernia (strangulated resection of omentum)	Block and local
4	Ventral hernia (strangulated)	Block and local
3	Inguinal hernia	Block and local
13	Inguinal hernia (strangulated)	Block and local
1	Inguinal hernia (strangulated resection of small gut)	Block and local
4	Inguinal hernia (strangulated resection of omentum)	Block and local
2	Femoral hernia	Local
1	Perinephritic abscess	Local and paravertebral
1	Nephrotomy	Paravertebral
1	Nephrectomy	Paravertebral
9	Suprapubic cystotomy	Local
8	Suprapubic prostatectomy	3 Sacral and local—5 Sacral, parasacral and local
2	Excision testicle and epididymis	Block and local
2	Excision inguinal glands	Block and local
1	Hysterectomy	Spinal
1	Salpingooophorectomy	Spinal
1	Amputation of fingers	Block
1	Osteomyelitis of radius	Block and local
1	Osteomyelitis of femur	Block and local
1	Amputation of foot (diabetic gangrene)	Block
2	Amputation of leg (thromboangitis obliterans)	Spinal
2	Amputation above knee (diabetic gangrene)	1 Spinal block
100		

This series of one hundred operative cases represents a large field of major surgery. Interventions upon the head, neck, chest, abdomen, pelvis and extremities were successfully performed with local and regional anesthesia. The age of our patients ranged between sixty and ninety-four years. The average age was sixty-eight years. The cases were about equally divided between the two sexes; fifty-four being males and forty-six females. The females proved more desirable subjects for this method of anesthesia than did the male patients. Race played an important rôle in the suitability of our cases for local anesthesia. The phlegmatic patients, as a rule, were more desirable for this method of operation

than were the socalled neurotic types, such as the Italian, Jewish and Negro patients.

In our series the anesthetic of choice was novocaine, although apothosine, and quinine and urea hydrochloride were administered in a limited number of cases (7). Quinine and urea hydrochloride anesthesia may last for an indefinite period. The prolonged anesthesia is explained by the infiltration of the nerves and tissues with a granular fibrin, and the period of anesthesia depends entirely on how soon this fibrin is absorbed.

Though the latter substitute was used during the late war, when novocaine was not so plentiful—novocaine is, in my opinion, the most reliable and dependable local anesthetic. The solution should be freshly prepared for each operation. The percentages used were as follows:

For infiltrating the immediate line of incision or around the operative area, novocaine solution one half of one per cent., with or without adrenalin. For paravertebral and parasacral conduction anesthesia, one per cent. novocaine solution, with or without adrenalin.

For spinal anesthesia .01 gm. of novocaine for every fifteen pounds of body weight of the patient. In other words, a patient weighing one hundred and fifty pounds would get .10 gm. or one grain and a half of novocaine intraspinously without the addition of adrenalin. The powdered novocaine is introduced in the syringe and about ten c. c. of spinal fluid is withdrawn. The novocaine, being readily soluble in this fluid, is reinjected intraspinously. Anesthesia is produced almost instantaneously. No adrenalin is added.

For sacral anesthesia twenty-five to thirty cubic centimetres of a two per cent. solution of novocaine are injected into the sacral canal and not into the spinal canal. With this process, the sacral plexus is bathed in the anesthetic fluid. All sensory impulses are blocked along the areas supplied by the sacral plexus. These areas are the lower rectum, anus, perineum, labia minora and majora, clitoris, vagina, cervix, bladder, penis, prostate and ischiorectal region. Anesthesia is produced in fifteen to thirty minutes. If parasacral anesthesia is combined with this method, the anesthetic effect is more prompt.

The selection of local anesthesia, whether infiltration, block, paravertebral, spinal, sacral or parasacral, depends more or less on the individual case.

Of the one hundred patients operated on, there were six deaths. Fifteen patients were practically moribund and many of the remaining cases showed evidences of one or more of the following complications before operation: bronchitis, emphysema, pneumonia, mitral and aortic valvular disease, myocarditis, advanced arteriosclerosis, nephritis, cirrhosis, peritonitis, diabetes, etc. This death toll, in my opinion, is not high, when we consider that many of our patients were poor surgical risks for general anesthesia and not altogether suitable for local and regional anesthesia. In some instances it became necessary to perform more than one operation at one sitting. The deaths were as follows:

CASE REPORTS

Case I.—An alcoholic gentleman of sixty-five was admitted to the hospital in desperate condition. An operation for strangulated inguinal hernia was performed and he died three days later of delirium tremens.

Case II.—A woman, eighty-two, with cardiac decompensation, was operated on for cholelithiasis and on the tenth day she died of hypostatic pneumonia and cardiac failure.

Case III.—A diabetic, seventy-eight, with gangrene of the foot. This woman had an amputation done at the midthigh. She died on the twenty-first day after operation in diabetic coma.

Case IV.—A woman, seventy-four, under paravertebral anesthesia was operated on for perinephritic abscess. She was in poor condition before operation and died of uremia twelve days later.

Case V.—A man, sixty-two, had a gastroenterostomy done for carcinoma of the stomach. He vomited continuously for a period of ten days prior to admission to the hospital. Patient died of inanition five days after operation.

Case VI.—Carcinoma of the prostate with nephritis. This man, seventy-five, also had a pronounced aortic lesion. Under sacral anesthesia an enlarged prostate was removed and five days later he died of uremia with cardiac failure.

ADVANTAGES OF LOCAL AND REGIONAL ANESTHESIA

After all, local and regional anesthesia have many advantages over inhalation anesthesia in operations upon the aged.

Cases that were formerly considered inoperable and hopeless with the use of general narcosis are now given a fighting chance with the newer methods of local and regional anesthesia. Vomiting rarely occurs, there is little complaint of thirst, and catheterization is seldom necessary. Shock is greatly diminished, because the tissues are handled with greater care. Hemorrhage is reduced to a minimum because closer attention is given to the minutest bleeding vessels.

Postoperative pain is diminished and sometimes altogether absent. The serious postoperative complications, such as pneumonia, cardiac failure, nephritis and acidosis are rarely encountered. Nourishment is given shortly after operation, the convalescing period is shortened, and the patient, satisfied with the treatment and results, frequently recommends this method of anesthesia to others.

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1882 Grand Concourse.

Symposium on Pediatrics

Medical Journal and Record

PUBLISHED SEMIMONTHLY BY

A. R. ELLIOTT PUBLISHING COMPANY, 53 PARK PLACE, NEW YORK, N. Y.

NEW YORK, WEDNESDAY, DECEMBER 17, 1924

Adenoids in Infancy: The Importance of Early Treatment

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New York

Though the subject of adenoids is one which may well be considered trite, and which without forced deliberation, I will admit, seems to have been adequately discussed from every point of view, yet I am satisfied that the importance of adenoids in infancy and early childhood is so great that further discussion is not amiss, especially as there exists considerable diversity of opinion among the family doctors as to how these cases should be treated, and as the family doctor is the first to note the condition, it is well that he should be acquainted with the views of the rhinologist upon the subject. No obstetrician, pediatrist or general practitioner is unfamiliar with the symptoms of the adenoid baby.

Nature ordained that the infant should breathe through its nose, and the moment this instinctive reflex is interfered with there is trouble, for the child does not know how to breathe through its mouth and it must suffer continuously, almost to the point of suffocation, until the mouth breathing habit is established; once this vicious habit has been formed and the afferent and efferent impulses to and from the nerve centre have been established in perverted channels, the foundation is laid for the train of symptoms and complications which result from nasopharyngeal obstruction, and to those malformations of the hard palate, the upper jaw, the nose and the face familiarly known as the adenoid facies.

If it is possible to prevent these dire results of nasal obstruction, no apology is needed for emphatic and repeated urging of all to heed at once and treat these cases radically when the obstruction has persisted for a time sufficient to convince us that it is of a more permanent nature than that caused by turgescence of the nasopharyngeal tissues.

The nasopharynx of the suckling infant is small and an incredibly small adenoid growth will cause obstruction, especially if it is engorged with blood. At birth the infant's nasopharynx is only one quarter of an inch high and one third of an inch wide; by the end of the first year this space has doubled in size. It will be realized at once, therefore, that during the first six months of life the postnasal space is relatively smaller than at any other age, and anything tending further to restrict this small space, whether it be an adenoid or congestion of the mucous membrane, is far more effective in obstructing nasal respiration at this age than at any other time of life, and a small adenoid may call for operative consideration which later on would produce no symptoms and could safely be ignored.

During the early weeks of life the most common symptoms of adenoids are difficulty in nursing continuously and snuffles. The latter may be attended by a mucopurulent secretion which sometimes excoriates the nostrils and upper lip; this condition has been mistaken for congenital syphilis. I have seen children being treated for syphilis who have recovered promptly after the removal of a small adenoid. Great care should be exercised in making a diagnosis in the case of infants having the socalled classical symptoms of congenital syphilis; embarrassing mistakes have been made. I know of one case where a suit for heavy damages was narrowly averted because of the mistake in diagnosis. The patient was the only child of a distinguished artist. The child certainly did have the snuffles with excoriations and the general appearance of a congenital syphilitic, but it was Wassermann negative. She promptly recovered after I had removed a small adenoid and a proper modification of the milk had been effected. A nonsyphilitic child affected with snuffles may safely be diagnosed as having adenoids, and other things being equal, an operation will be wisely advised. There may be little or no obstruction, but the adenoid is there and it is producing irritation and should be removed.

Obstructing adenoids cause mouth breathing, making it impossible for the nursing child to take either the breast or the nursing bottle satisfactorily. If the obstruction is continued long enough the well-known adenoid facies is the result, and this term is used here to cover the complications involving the mentality and hearing of the patient as well as the resulting physical deformity which is familiar to all observers.

In operating, no anesthetic is administered. The child is wrapped in a sheet, as in doing an intubation, and is held by an assistant in his arms, the head of the child resting on his right shoulder, and the left

hand of the assistant being placed on the forehead of the patient, holds the head in position. I use a very small Gottstein curette and make only one sweep. I make no attempt to remove the entire mass of adenoids. In fact I try not to do so, for I believe that lymphoid tissue, within normal limits, should be left undisturbed, and that operative measures should be considered only when this tissue is diseased or present in sufficient volume to produce obstruction to nasal respiration or interference with the function of the Eustachian tubes.

CONCLUSION

In conclusion I will say that the advantages to be gained by this simple operation are so great that one is amply justified in advising it when symptoms referable to adenoids are present. The operation should not be postponed with the expectation that the infant will overcome the difficulty as it grows older and that there will be no disagreeable sequelæ; the chances are against such a happy outcome.

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The Conservation of Hearing in the Suppurative Middle Ear Diseases of Childhood*

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The factors which are capable of causing disturbances of the hearing in young children are numerous. In this paper, however, I will limit myself to a discussion of the conservation of hearing in the suppurative middle ear diseases of childhood. It is in these conditions that much can be accomplished by preventive measures and rational therapy.

The acute diseases of childhood often give rise to aural complications of a suppurative nature. In many instances, a paracentesis of the drum is required to afford egress to the pent up pus. Where this becomes necessary, the incision should be in the lower and posterior quadrant of the drum. Such an incision properly made will remain open as long as there is pus in the middle ear. The pressure of the pus and the contraction of the radiating fibres of the drum will not permit the opening to heal as long as there is need for its remaining patent. When the disease subsides, this opening will be bridged over by connective tissue and eventually closed. This then becomes the seat of a scar which, in the great majority of instances, scarcely interferes with either the function of the drum or the acuity of hearing.

To make several incisions in the drum or to make repeated incisions in the hope of warding off graver consequences is a procedure to be deplored. Such methods only serve to destroy more of the drum substance and lessen its elasticity, with a consequent disturbance in the conduction apparatus. Those who employ them do so to afford more room for drainage and so prevent the production of a mastoiditis. This theory is not supported, however, when one considers the pathogenesis of a mastoiditis produced by contiguity of tissue. With a timely incision properly performed, adequate drainage of the pus in the tympanum is obtained. When signs of mastoiditis supervene after such an incision has been made, one cannot then consider that the lesion in the mastoid was caused by the damming back of pus. Such a lesion is caused by the spread of infection through the contiguity of tissue and subsequent incisions in the drum are useless in attempting to ward off a disease which has already developed. A mastoiditis is present. Whether it will develop into a condition requiring surgery is not dependent upon the drainage afforded through openings in the drum but upon the ability of Nature to combat the infection successfully.

In the treatment of acute otitis, many have recently begun to advocate the use of suction as a preventive of mastoiditis. It is hoped, by this procedure, to suck the pus forcibly from within the mastoid cells through the antrum and aditus into the tympanum. To me, this is a valueless as well as a dangerous procedure. All acute middle ear suppurations are attended by a reaction in the mastoid cells. This is clinically evinced by pain and tenderness over the mastoid process and radiographically by a clouding, but not a destruction, of the mastoid cells. To apply suction in such a case cannot be termed a preventive measure. On the contrary, suction increases the edema of the parts, distorts the drum by making it edematous and angry looking, prevents the closure of the opening in it which would have healed as soon as the discharge diminished, and lastly, exerts undue traction on the ossicular chain. The tympanic cavity is therefore expected to repair not only the damages of the suppuration but also the harm done by the suction, and the period of convalescence is prolonged. Such cases when tested show a decided diminution in the hearing in the affected ear.

Where a surgical mastoiditis is present, suction cannot cause an abatement of the disease. When we consider the mechanics of the procedure this at once becomes clear. The aditus ad antrum is situated at the upper posterior portion of the tympanic cavity in a space conspicuous for its numerous reduplicated folds of mucous membrane. Negative pressure of any degree would cause a dilatation of the capillaries in these parts with a consequent engorgement and edema of the mucous folds. The mucous lining of the aditus likewise swells and there is thus created an obstruction to the free passage of pus through the antral opening. The use of suction, therefore, defeats the purpose for which it is employed. I have seen several cases of surgical mastoiditis which were treated in this manner and which later came to oper-

*From the Otolaryngological Department of Beth Israel Hospital, New York. Read before the Eastern Medical Society, October 10, 1924.

ation. All of the patients so treated presented broken down mastoid cells filled with debris, and in addition had either a perisinal or epidural abscess. One patient had a sinus thrombosis and another a brain abscess which eventually ruptured and produced a fatal meningitis.

There are many patients with mastoiditis presenting all the indications for surgical intervention, which will suddenly apparently subside, the temperature return to normal, and the pain disappear, but the discharge from the middle ear will persist. Those who employ suction attribute this recession to their success in drawing off the pus from the mastoid. In these cases, though the patients then are relieved of an imminent surgical condition, they are confronted with a chronic suppuration of the middle ear due to a chronic mastoiditis. The pus will continue to pour out with or without the aid of suction until the mastoid process stops suppurating. In other words, Nature operates upon the mastoid and the pus is afforded egress through the middle ear. In these cases, the drum becomes the seat of a permanent deficiency, the tympanic mucosa is destroyed in spots and replaced by scar tissue, and eventually, if the process is permitted to continue, adhesive bands make their appearance between the ossicles and the neighboring structures. The result is a marked diminution in hearing.

Let us return for a moment to the question of the surgical mastoid produced by contiguity and which has been termed the coalescent mastoiditis by Kopetzky. In the majority of cases, this type presents symptoms so alarming to the parents of the child that they do not hesitate in permitting an operation to be performed for the relief of the condition. In some cases, however, especially in the socalled painless type of mastoiditis, or in the cases wherein the more sensational symptoms have disappeared and only the aural discharge persists, the parents can see no reason for the performance of an operation. The family physician likewise sees that all danger is past for the present and frequently proceeds to treat the discharge in the hope of causing it to cease entirely. As I have pointed out, this discharge has its source in the mastoid process and will not stop until all the remains of the suppuration have been removed therefrom. One alternative suggests itself. On the one hand, while the patient may continue in apparent safety, there is a suppurating discharge present which is constantly destroying tissue both in the mastoid and in the middle ear, and which, while it may eventually cease entirely, will leave the patient with markedly affected hearing. On the other hand, if the simple mastoid operation is performed, the disease is removed *en masse,* thus permitting the middle ear to return to normal and the greatest amount of hearing is thereby preserved. Obviously, the latter is the course to pursue, and it is the duty of the general practitioner in his rôle as counsellor to impress upon such patients that the mastoid operation, performed in these cases as a prophylactic measure, presents far less danger than the presence of a suppuration within the mastoid which is destroying the hearing and which may threaten the endocranium.

In the cases of chronic suppuration in children, wherein hearing has already been markedly affected, the general practitioner is often at a loss to determine what to do to stop both the discharge and the loss of hearing. In those cases wherein the discharge is due to a chronic mastoiditis with bone necrosis, it was formerly the custom to perform a radical mastoid operation to cure the lesion and stop the discharge. The element of hearing was not considered, and, while the discharge stopped, these patients had complete loss of useful hearing in the operated ear. The children were consequently handicapped in school and had great difficulty in obtaining an education. The radical operation is at present rarely performed on children. Where the case of bone necrosis presents signs which point toward a possible danger of intracranial invasion, it is sufficient to perform a simple mastoid operation. This removes the disease in the mastoid process and, by keeping a permanent opening leading down to the antrum, the discharge from the tympanic cavity is afforded drainage through the middle ear and through the retroauricular opening. All danger of intracranial invasion is thus prevented and the hearing is not further reduced by operative procedures in the middle ear. These patients are thus given the benefit of using whatever hearing remains in the affected ear and at the same time are relieved of the danger that the disease presents to life.

Where the discharge is due to what is termed a chronic suppuration of the tympanic mucosa, the method of procedure is different. Here the mastoid cavity is not the seat of the disease and consequently need not be considered in the means used to conserve the hearing. These cases of chronic suppuration of the tympanic mucosa are caused by repeated infections from the respiratory passages and by a lowering of the patient's resistance. They all have defects in the drum, centrally located, and present a discharge which is intermittent in character. The patients may have freedom from the discharge for years, and then, with a lowering of the vitality or a nasal catarrh, the discharge will start anew. In the conservation of the hearing in these cases our attention must be directed toward maintaining the general health of the patient and correcting any disturbances in the respiratory passages which may predispose to another attack of otitis. Obstructions such as excess adenoid tissue, occlusive septal deflections and polypi and suppurative foci such as infected tonsils, sinusitis and poor teeth, these are the elements to be corrected before one can hope to stop the aural discharge and so conserve the hearing. Local treatment to the ear merely allays the individual attack. Attention to these details prevents further attacks.

SUMMARY

1. A timely incision in the drum, adequately performed, meets the indications presented by a bulging drum due to an acute purulent otitis media. To make multiple incisions or to make repeated incisions in the drum tends to destroy the function of the membrana tympani and leads to a subsequent loss in the acuity of hearing.

2. The use of suction in the treatment of acute middle ear diseases produces no result other than an

irreparable loss of tissue in the middle ear and a consequent diminution in hearing.

3. An aural discharge of long standing destroys tissue in the middle ear and mastoid process. Cases presenting such a lesion should be adequately treated before too great a loss in hearing has occurred.

4. The performance of a simple mastoid operation is to be preferred to expectant treatment in acute suppurative diseases of the mastoid process which have apparently subsided, but which present a persistent, profuse aural discharge.

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Acute Intussusception in Infants

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During the past three and a half years I have operated in a consecutive series of eleven cases of acute intussusception in infants with one death, or less than ten per cent. mortality. Stewart gives the average mortality in cases where reduction is easy thirty to forty per cent., but when reduction is impossible ninety per cent.; Bolling, from the service of W. A. Downes, in a series of fifty cases has a mortality of thirty per cent.; Clubbe in a series of 270 cases, twenty per cent.; Hipsley in fifty-one operations eight per cent. It is generally recognized at the present day that the factor of most importance is early diagnosis, and the only treatment is laparotomy and reduction of the intussusception. As a general rule the most favorable cases are those in which the interval between the onset of the symptoms and the time of operation is shortest. However, it will be found when a large number of cases are compared, and is even evident in our small series of eleven cases, that there is a striking variance in the rate with which the condition progresses in individual cases. In other words, what is considered an early diagnosis, from the viewpoint of time, in one case is late for another. Resection may be necessary because of tremendous swelling of the bowel and irreducibility in one case which is early from the viewpoint of duration of symptoms, while in another reduction may be easily accomplished when the duration of the symptoms is longer. The greatest difference is therefore manifested in the rate with which the condition progresses.

An analysis of the eleven cases herein reported brings out certain interesting features. There were three females and eight males. All were breast fed, healthy infants. Only one was above twelve months of age. In each case the onset was more or less abrupt with the usual symptoms. Resection was done in two cases with one recovery. The patient who recovered was a five months baby, operated on twenty-eight and a half hours after onset of symptoms. The symptoms in this case had developed rapidly and at operation there was so much swelling at the apex of the intussusception that reduction could not be accomplished without ripping the bowel wall. The cecum and part of the ascending colon were removed, and the terminal ileum united to the hepatic flexure by a lateral anastomosis. The bowels moved the day following operation. Recovery was rapid. In another patient eight months of age, duration of symptoms from the onset to the time of operation was seventy-two hours, or three days, the apex of the intussusception protruded from the rectum. At operation reduction was easy and rapidly accomplished. The convalescence was calm. The fatal case was an enteric intussusception in a male baby three months of age, of forty-eight hours' duration, in which resection of the small intestine was done for gangrene. The patient died shortly after the operation. The earliest patient operated on was ten to twelve hours after onset of symptoms. In two cases where the diagnosis was uncertain because it was not possible to feel a mass at first, fluoroscopic examination after a barium enema was helpful in arriving at a diagnosis.

Considerable differences also are observed in the type of convalescence. In some the convalescence was uneventful and rapid, the patient leaving the hospital six to seven days following the operation. In other cases it was of extreme violence, temperature running for days from 103° to as high as 106°. In one case reported, following the operation, there was a temperature of 106.5°.

ETIOLOGY

In regard to the etiology of this interesting condition, the actual cause has never been decided. It is generally known that in infants there is a much greater mobility of the lower ileum, cecum and ascending colon due to an unusually long mesentery. With a bowel, which is more irritable and in which muscular action is not so well coordinated, it is possible that these factors in infants predispose to acute intussusception. Injudicious feeding is stressed by many authors, other authors feel that active purgation in infants has a tendency to produce the condition. In the eleven cases reported, only two gave a positive history of any gastrointestinal disturbances prior to the onset of symptoms. This disturbance was manifested only by a mild diarrhea. In none of the cases were purgatives given prior to the onset of the symptoms. Every baby was breast fed and well nourished.

Perrin and Lindsay have come to the conclusion that the determining factor in the causation of intussusception is the production of the equivalent of a foreign body within the intestine. The foreign body is provided by the swelling of the preexisting lymphoid tissue within the intestinal wall. The

factor which produces this swelling is some gastro-intestinal disturbance. This seems especially likely when it is remembered that the distribution of the lymphoid tissue in this part of the alimentary canal in infants is unusually abundant. It is common for all operators in these cases to find greatly enlarged lymphatic glands in the mesentery about the ileocecal region.

PATHOLOGY

The pathology of acute intussusception in infants depends upon the disturbance in the blood supply of the invaginated loop of gut. The invaginated bowel as it passes into the enveloping gut or sheath drags its corresponding part of the mesentery with it. At the neck of the intussusception, the mesentery becomes constricted, and the free flow of blood through the vessels impeded. The degree of this constriction at the neck of the intussusception becomes therefore an important item, not only in the development and nature of the pathological changes in any given case, but also in the clinical features of the same case. At first, in the majority of the cases, this constriction is not tight. It possibly is only sufficient to obstruct the venous return in the mesentery. As a result of this the veins dilate, and distend. Progressive engorgement of these at last causes the walls of the terminal venules in the intestine to give way, and the intestinal wall becomes ecchymotic and infiltrated with extravasated blood. The mucosa of the intestine becomes intensely congested, and soon begins to pour blood and mucus into the lumen, and this appears in the stools. As the engorgement and swelling goes on in the intestinal walls, the constriction at the neck of the intussusception grows tighter and more binding with a still greater impediment to the circulation.

Finally, the arterial circulation supplying the intussuscepted loop of intestine is obstructed, and gangrene quickly results. When a tight constriction of the mesentery develops suddenly causing a very quick alternation in the circulation, the pathological changes in the gut develop more rapidly,—the intestine becomes more markedly infiltrated, swollen and edematous, making reduction more difficult and even impossible, although the patient may be seen early. Gangrene naturally develops sooner and the case moves on more speedily to a fatal termination. The severity of the symptoms at the onset and the rate of progress in the development of these, depend therefore greatly on the degree of the constriction at the neck, and the extent to which the circulation is obstructed. Moorhead calls attention to cases in which the constriction may not be so severe, but in which a low form of inflammation sets in, the walls of the gut become thickened, adhesions develop between the peritoneal surfaces, sometimes at the neck only, but more frequently wherever they are in contact, and if the patient lives the whole of the intussuscepted part may slough off. When the constriction is lax there may be no change in the intestinal wall.

Complete obstruction of the intestine is rare. Normal bowel movements do occur after the onset of symptoms, and gas may be passed readily during the later stages. This is no doubt the reason that so few of the cases show any abdominal distention. With the increasing edema and swelling of the bowel walls, and particularly the apex, complete obstruction sometimes develops in the late cases, with distention of the abdomen, fecal vomiting, profound toxemia, and other symptoms. To summarize, however, it is evident that in the great majority of the cases the severity of the symptoms depends more on the degree of the interference with the circulation than upon the obstruction of the bowel.

The ileocecal region is the most usual site of occurrence. The frequency with which ileocecal intussusception occurs is due to some extent to the difference in size between the two parts, and to the fixed position of the cecum. The very close analogy between the sphincterlike ileocecal valve and the sphincter of the rectum, and between the invagination that takes place at the one, and the prolapse that occurs with equal frequency, especially in children, at the other, has been noted by Moorhead. "Ileocecal tenesmus probably sets in whenever there is any violent catarrh or abnormal irritability of the intestine, just as anal tenesmus occurs in similar conditions in the rectum; and the repeated forcible peristalsis, driving down on the firmly closed ileocecal valve, causes intussusception in the one case, just as it causes prolapse of the rectum in the other. When the invagination has commenced, the contact of the swollen and congested apex, stimulating the walls of the intestine below, tends to make it increase indefinitely."

The classification of Clubbe is usually accepted for distinguishing the anatomical forms of intussusceptions: First, the ileocecal variety, includes forty-four per cent. of the cases, and is the form in which the ileocecal valve or the head of the cecum forms the apex, the intussusception growing at the expense of the colon. Owing to the great mobility of the ileum, a large portion of the bowel may be invaginated, passing through the colon and rectum and appearing at the anus. Second, the enteric, which includes thirty per cent. of the cases, and in which the small intestine alone is involved. Third, the colic form, which may occur at any point of the colon or rectum, but owing to the fixity of this portion of the bowel, is limited in extent. The colic variety includes about eighteen per cent.. of the cases. Fourth, the enterocolic type includes two forms. In one the intussusception, beginning in the ileum, near the valve, goes through the valve, and increases at the expense of the cecum and colon. In the other, the intussusception begins in the ileum, but when it reaches the valve, pushes the valve before it, and increases at the expense of the cecum and colon. In this type, when the cecum is unfolded, the enteric intussusception is seen to emerge and when the cecum is completely unfolded it is found to be empty. Enterocolic intussusceptions are really double, the socalled compound intussusceptions of some authors. Richard Bolling and Culberth Wallace are of the opinion that these forms are more common than generally conceded—eight per cent. of cases.

Intussusceptions rarely occur during an attack of ileocolitis. While this is not usual it is frequent enough to be kept in mind.

DIAGNOSIS

Perhaps the single, most essential phase of acute intussusception in infants is the question of early

diagnosis. There is no other surgical condition which demands more promptitude and certitude of diagnosis, if the life of the infant is to be saved. The condition is always grave, and must be dealt with in a decisive manner. In the late, unrecognized, neglected cases the patients will die regardless of the treatment in most instances. The whole problem of intussusception practically resolves itself into one of early and prompt diagnosis followed by proper treatment. It is a fact also which is gradually becoming more evident that the diagnosis is not a difficult one, even in the early cases, if the condition is suspected and some care is exercised. It is my experience that

The clinical picture is one of remarkable vividness. A healthy, growing, thriving, breast fed infant, three to five months of age, usually a male, suddenly cries out, or begins to scream and draws himself together as if in great pain. He grows pale, and possibly may break into a moderate perspiration. After a variable time the baby grows calm again and seems to be comfortable, only to be seized shortly with another similar attack. Sooner or later vomiting occurs—usually at first the contents of the stomach. He vomits every feeding after the onset of the symptoms. There may be one or more normal bowel movements after the beginning of the symptoms.

ANALYSIS OF CASES

Name	*Age*	*Sex*	*Symptoms*	*Duration*	*Physical Signs*	*Operation*	*Result*	*Type*
1. H.H.	7 Mos.	M	Sudden onset with pain, bloody stools and rather late vomiting.	46 hrs.	Slight elevation of temperature and pulse. Some stupor. Mass extending across centre of abdomen.	Nov. 17, 1921. Laparotomy. Easy reduction.	Recovery. Rapid convalescence.	Ileocecal
2. C.L.	10½ Mos.	M	Onset with colic, one normal b.m., followed by blood and mucus later, symptoms as a whole mild. No shock.	18 hrs.	Bright and alert on adm. Moderate elevation of pulse and temperature. Mass to right and below umbilicus. Easy to feel.	April 3, 1924. Laparotomy. Reduction, very marked edema, some difficulty in reducing.	Recovery. Convalescence very quiet.	Ileocecal
3. R.L.	8 Mos.	M	Onset sudden, colic, vomiting, no blood and mucus by stool.	10 to 12 hrs.	Restless, slightly elevated pulse and temperature. Easily palpable mass in upper right abdomen.	May 10, 1924. Laparotomy, reduction easily and quickly carried out.	Recovery. Quiet convalescence.	Ileocecal
4. A.S.	6 Mos.	M	Onset with colic, vomiting, shock and fever. No blood or mucus by stool.	17 hrs.	Restless, pale, elevated pulse and temperature, very indefinite mass in upper right abdomen. Barium enema—obstruction at hepatic flexure.	July 6, 1924. Laparotomy. Reduction. Mass high up beneath liver. Easily reduced.	Recovery. Rapid convalescence.	Ileocecal
5. W.S.	3 Mos.	M	Colic, vomiting, blood and mucus by bowel.	48 hrs.	Shock, fever, rapid pulse, convulsions, mass in lower abdomen.	May 15, 1923. Laparotomy. Resection. Gangrene of intestine.	Death.	Enteric
6. W.R.	8 Mos.	M	Vomiting, blood and mucus by bowel. Marked toxemia, straining.	72 hrs.	Marked shock, subnormal temperature, rapid pulse. Mass in lower abdomen. Apex protruded from rectum.	May 27, 1923. Laparotomy. Reduction.	Recovery. Calm convalescence.	Entero-colic
7 R.P.	5 Mos.	M	Abrupt onset with pain, shock, vomiting, blood and mucus by bowel.	28½ hrs.	Mass to left of umbilicus, toxic stupor, pallor, rapid pulse, high temperature.	Oct. 11, 1923. Resection right half of colon. Irreducible.	Recovery. Convalescence complicated by wound infection.	Ileocecal
8 C.F.	6 Mos.	F	Sudden onset with pain, pallor, and perspiration, vomiting, blood and mucus by stools.	36 to 40 hrs.	Mass in upper right abdomen. Elevated pulse and temperature.	Nov. 5, 1922. Laparotomy. Reduction.	Recovery. Quiet convalescence.	Ileocecal
9. K.S.	14 Mos.	M	Onset sudden with colic, vomiting, mucus and blood by stools.	24 to 36 hrs.	Elevated pulse and temperature, tumor mass in lower abdomen.	July 22, 1921 Laparotomy. Difficult reduction.	Recovery. Stormy convalescence complicated by pneumonia, temperature range 101 to 105 for one week.	Ileocecal
10. H.P.	3 Mos.	F	Onset without much pain, but with vomiting, blood and mucus by stools. Only pain manifested by grunting.	43 hrs.	Elevated pulse, and temperature, mass in left flank.	July 2, 1923. Laparotomy. Easy reduction.	Recovery. Comparatively quiet convalescence.	Ileocecal
11. M.C.	3 Mos.	F	Onset sudden with vomiting and pain, passage of blood and mucus by stools.	28 hrs.	General appearance on adm. good. Temperature and pulse elevated. No mass felt. Barium enema showed obstruction in hepatic flexure.	Aug. 9, 1922. Laparotomy. Easy and quick reduction.	Recovery. Extremely stormy convalescence, high temperature, rapid pulse, restlessness, convulsions, with great intoxication.	Ileocecal

a few hours' close observation will usually clear up a diagnosis that at first seemed obscure. An infant suspected of having an intussusception should be at once placed in a hospital where he can be kept under satisfactory scrutiny. There is an exception to the usual simplicity of diagnosis and that is the type of case in which intussusception comes on and is superimposed upon an ileocolitis. The diagnosis then of course is extremely difficult. However, in most instances I believe the diagnosis can be made, if not by one means, then by another, and I have not yet encountered the necessity of doing an exploratory operation on these little infants.

The absence of intestinal obstruction, therefore, never militates against the diagnosis of intussusception. Sooner or later stools consisting largely or solely of blood and mucus are passed. Associated with these passages there is a great deal of straining and tenesmus observed in the patient. In the early stages the baby may look well, and be playful between the paroxysms of pain, vomiting, and other symptoms, but as time goes on he begins to appear more toxic. The temperature and pulse mount, the baby grows dull and listless, becomes extremely pale, the vomiting is almost continuous, and nothing comes from the bowel, except blood and mucus. With

the development of complete bowel obstruction, the abdomen becomes distended, fecal vomiting ensues, and death from toxemia quickly follows.

Such are the symptoms. Of course, they vary in intensity in different cases, as already brought out in the discussion of the pathology. There are cases reported in the literature and occurring in my own experience, in which the symptom of pain was greatly masked, possibly indicated only by a little grunting or straining of the patient, but in which the repeated appearance of blood and mucus in the stools was the first symptom to be noted by the parents. Discharge of blood and mucus may be entirely absent, although this is the most constant of the symptoms.

DIAGNOSIS

The diagnosis can in the majority of the cases be made on the history and physical examination. When a healthy baby becomes ill with striking abruptness, suffers paroxysms of pain, associated with more or less shock, vomiting, and the passage of blood and mucus by bowel, and when on examination an elongated, rounded mass can be felt in the abdomen, the evidence is sufficient to reveal the condition. The most valuable item, besides the pallor, temperature, and pulse elevation, to be noticed on physical examination is this mass in the abdomen, and it is really the major part of the diagnosis. The mass in the early cases is on the right side, or just above the umbilicus, and sometimes a little below it. Later it is on the left side and in the pelvis. In some instances it is extremely easy to feel, is almost visible, in others best felt by the combined rectoabdominal method—in some cases palpable only with the infant under an anesthesia, and in others it is almost impossible to feel. The situations in which palpability is difficult are when the mass is located high up beneath the liver on the right, or when for some reason the mass closely hugs the posterior abdomen and is overlayed by all of the small intestines. Close observation, with examinations at frequent intervals, or under an anesthesia, may make it possible to demonstrate the mass.

There still will remain cases which are doubtful, cases in which the sensation of feeling a mass is extremely uncertain, at the most. What is to be done with cases of this type? My practice has been to administer a barium enema, and study the colon under the fluoroscope. Nothing but satisfactory results have been met with in the employment of this agency. In one early case, the patient was not extremely sick, and a mass could not be perfectly made out, the intussusception was demonstrated at the hepatic flexure. At operation the mass was found high up beneath the liver. In another case with only the symptom of passing blood and mucus by stools, also an early case, fluoroscopic examination after an enema was helpful in reaching a diagnosis. In a third case, presenting all of the classical symptoms, without a palpable mass, fluoroscopic observation showed the colon to be normal. Operation was delayed, the infant kept under observation, improved rapidly and finally recovered. Of course if the intussusception is enteric this method of examination is of no value; but as enteric intussusceptions account for only thirty per cent. of the cases a clear colon on fluoroscopic examination argues against intussusception in at least seventy per cent. of all cases.

In regard to the question of spontaneous reduction, it is evidently a fact that such a thing does occur. It is quite possible that slight degrees of intussusception undergo spontaneous reduction more commonly than is usually imagined, the cases presenting the usual symptoms of onset but in a short while completely recovering. Andrew Fullerton, of Belfast, reported the history of an unmistakable case of spontaneous reduction. This case was a male child, aged three months, with the usual onset and symptoms of acute intussusception, and a palpable mass in the right side of the abdomen. The author remarked that under the palpating finger the mass was felt to grow smaller and finally disappear. In spite of this fact, the diagnosis of intussusception was made and immediately an operation performed. The pathological findings in the cecum and terminal two inches of the small intestine were characteristic of an intussuscepted bowel after reduction, the walls being very edematous and ecchymosed.

TREATMENT

There are various reports of cases in which reduction is said to have occurred after the use of enemas and the installation of other agents in to the rectum. Immediate laparotomy, however, for purposes of reduction of the intussusception under the guidance of the hand and eye is the recognized means of treating these cases today. As a general rule, the reduction in early cases is not difficult and can often be quickly performed. However, resection is sometimes necessary even in the early cases because of the tremendous swelling which has developed in the apex and does not permit reduction without splitting the bowel wall. Of course where gangrene has occurred resection and anastomosis is the only outcome. Resection naturally carries a high mortality rate. In reducing the intussusception only sufficient amount is reduced in the abdomen to permit the mass to be brought to the outside, where the reduction is completed. Many English surgeons make a practice of removing the appendix at this time, but this seems to add something to the risk of the operation without any distinct advantage.

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Doses for Children

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Multiply the age of the child by five; the resulting product will be the correct percentage of the adult dose suitable for a child of that age.

Suppose the child is five years old, and the physician wishes to administer a medicine of which the average adult dose is eight grains (or one half gram). First multiply the age of the child by five, and the result, twenty-five, equals the right percentage (twenty-five per cent.) which the child of five should take of eight grains; twenty-five per cent. (or one fourth) of eight equals two; therefore the child of five should take two grains when the average adult dose is eight grains.

Compare this with the cumbersome fraction of Young's rule. Young's rule calls for that fraction of the adult dose formed by the age of the child for a numerator and the age plus twelve for a denominator. In the example given, five, the age of the child becomes the numerator and five plus twelve, or seventeen, becomes the denominator; the fraction thus formed, five seventeenths, is the amount the child of five should have of the average adult dose; five seventeenths of eight equals forty seventeenths, or two and six seventeenths, or about two and one third. Besides being more awkward to compute, the dose is somewhat larger.

Young's rule and this rule give exactly the same result for a child of eight; children younger than eight take a larger does by Young's formula than by this one, whereas children older than eight years take a progressively smaller dose. Did you ever stop to think that Young's rule never permits the adult dose, no matter how old the patient may be? With this rule the adult dose is reached at the age of twenty.

This rule is a modification of one worked out by Dilling, who divides the age by twenty in order to obtain the fraction of the adult dose required; or, for the metric system, he says to multiply the age by five and divide the product by one hundred in order to obtain the fraction of the adult dose required. It will be seen that the formula given for the metric system is similar to the one herein proposed, is equivalent to it, in fact, in outcome. But it is more simply stated in our formula, and is utilizable equally well for the English or metric system of weights and measures. Of course, if one thinks more readily or rapidly in vulgar fractions than in decimals, he can easily and quickly transpose his percentages into that form, making twenty-five equal one fourth, or sixty per cent. (the fraction for a child of twelve) equal to sixty one hundredths (equal to six tenths, equal to three fifths). No matter what may be the age of the child, the numerator of the fraction will always be a multiple of five; and since the denominator will always be one hundred, the resulting fraction will be an easy one to handle, and the computation from the adult dose an easy one to figure.

It will at once be asked how this percentage rule compares with Clark's rule. Clark's rule, it may be recalled, "is based upon the relative weight of the child as compared with the weight of the average adult." It assumes that the average adult weight is 150 pounds; it then states that if the weight of the child is divided by the adult weight (i. e., if the weight of the child is the numerator, and 150 is the denominator), the resulting fraction will be the correct proportionate part of the average adult dose for a child of that weight, regardless of age. For example, a child weighing fifty pounds should be given one third of the average adult dose. The percentage rule proposed runs fairly well with the average girl or boy under Clark's rule, but is not quite as accurate for the exceptional underdeveloped or overdeveloped child, though the variation here is not much more than the fractional portion discarded by Clark's rule. For example, under Clark's rule a child weighing fifty pounds would be entitled to three and one third grains, if the average adult dose was ten grains; but in round numbers three grains is the dose recommended. Now fifty pounds is the average weight for a child of seven; by the percentage rule, the dose for that child would be three and one half grains if the average adult dose was ten grains—a difference of one sixth of a grain from the result obtained by Clark's rule. However, a child of nine might weigh but fifty pounds if only forty-six inches tall, and a child of six might weigh fifty pounds if forty-six inches tall; but these exceptions from the average will be taken into account by the physician, and a modification in dose will probably normally be made to suit the individual case.

Appended are two tables showing the doses for the ages from one to twenty, in both the metric and English systems, when the adult dose is five grains or is one eighth grain, as determined by both the percentage system and by Young's rule; also, in table I. after the age of five, the age, height and weight of both girls and boys for a like dose as determined by Clark's rule.

From Table I it will be seen that Clark's formula is not equivalent for girls after the age of twelve, nor for boys between the ages of thirteen and eighteen; for to be equivalent it demands underweight of the average boy and overweight and height for the average girl. It is generally assumed that adulthood is attained at twenty-one; but if 150 pounds be taken as the average adult weight, then the boy at twenty-one must be seventy inches high, and the girl must be seventy-two inches tall. According to most tables, the average height of men is about sixty-eight inches, and that of women about sixty-four inches. If this is correct, then the average adult weight for men would be reached at about the age of thirty-four, and the same weight for women at about fifty-five. As these two conclusions are probably incorrect, being too low for the average weight of men and too high for the average weight for women, it would seem that the assumption in Clark's

rule that 150 pounds is the average adult weight from which the doses for those of less weight be computed, permits of wider error than the somewhat arbitrary percentage ratio. The percentage ratio takes it for granted that adulthood is reached at relative weight of the child, is substantially in agreement with the percentage formula from the age of five to adulthood; below the age of five it requires doses considerably larger than the percentage formula—over twice as large for the infant of one

TABLE I.

WHEN THE AVERAGE ADULT DOSE IS FIVE GRAINS

	Percentage Formula		Young's Rule		Clark's Equivalent					
					Age		Height		Weight	
Age	English Grains	Metric Milligrams	English Grains	Metric Milligrams	B.	G.	B.	G.	B.	G.
1	1/4	15	5/13	23	..	..	..	..	...	...
2	1/2	30	5/7	43	..	..	..	..	...	...
3	3/4	45	1	60	..	..	..	..	...	...
4	1	60	1 1/4	75	..	..	..	..	...	...
5	1 1/4	75	1 1/2	88	5	5	40	40	37	37
6	1 1/2	90	1 2/3	100	6	6	41	41	40	41
7	1 3/4	105	1 16/19	110	7	7	46	47	50	50
8	2	120	2	120	8	8	50	51	60	60
9	2 1/4	135	2 1/7	129	9	9	54	55	72	72
10	2 1/2	150	2 3/11	136	10	10	55	56	75	75
11	2 3/4	165	2 9/23	143	11	11	57	57	82	82
12	3	180	2 1/2	150	12	12	59	59	90	90
13	3 1/4	195	2 3/5	156	13	13	61	60	97	97
14	3 1/2	210	2 9/13	161	14	14	61	61	105	105
15	3 3/4	225	2 7/9	166	15	15	63	62	112	112
16	4	240	2 6/7	171	16	16	64	64	120	120
17	4 1/4	255	2 27/29	176	17	17	66	66	127	127
18	4 1/2	270	3	180	18	18	67	68	135	135
19	4 3/4	285	3 2/31	184	19	19	68	70	142	142
20	5	300	3 1/8	187	20	20	70	72	150	150

TABLE II.

WHEN THE AVERAGE ADULT DOSE IS ONE EIGHTH GRAIN

	Percentage Formula		Young's Rule		Clark's Equivalent					
					Dose in mg		Height		Weight	
Age	English Grain	Metric Milligrams	English Grain	Metric Milligrams	B.	G.	B.	G.	B.	G.
1	5/800	0.4	1/104	0.6	1.0	1.0	29	29	20	19
2	1/80	0.8	1/56	1.1	1.4	1.3	32	32	26	25
3	1/53	1.2	1/40	1.6	1.6	1.6	35	35	31	30
4	1/40	1.6	1/32	2.0	1.9	1.8	38	38	35	34
5	1/32	2.0	1/27	2.3	2.2	2.1	42	41	41	40
6	3/80	2.4	1/24	2.7	2.4	2.4	44	44	45	45
7	1/23	2.8	1/22	2.9	2.7	2.7	46	46	50	49
8	1/20	3.2	1/20	3.2	2.9	2.8	48	48	54	53
9	1/18	3.6	1/19	3.4	3.2	3.1	50	49	60	58
10	1/16	4.0	1/18	3.6	3.7	3.6	53	52	66	64
11	1/15	4.4	1/17	3.8	4.0	4.0	55	55	75	75
12	3/40	4.8	1/16	4.0	4.3	4.3	56	57	80	81
13	1/12	5.2	1/15	4.2	4.7	4.8	58	59	88	91
14	1/11	5.6	7/104	4.3	5.3	5.3	61	60	99	100
15	3/32	6.0	15/216	4.4	5.9	5.8	63	61	110	108
16	1/10	6.4	1/14	4.6	6.6	6.0	66	62	124	113
17	17/160	6.8	1/13	4.7	6.8	6.3	67	63	130	118
18	1/9	7.2	3/40	4.8	7.2	6.4	68	64	136	120
19	19/160	7.6	19/248	4.9	7.7	6.6	69	65	144	125
20	1/8	8.0	5/64	5.0	8.0	7.0	70	66	150	130

twenty years of age; between the ages of one and twenty it divides the doses in strict ratio; it leaves to the physician's discretion further modifications to conform to departures from the physiological mean.

In Table II the equivalent to Clark's rule will be those of the average boy and girl; the dose corresponding is given in milligrams, and should be compared with the milligram dose for the same age under both the percentage formula and under Young's rule.

Table II shows that Young's rule is progressively inaccurate and inadequate after the age of twelve; it ought to be discarded. Clark's rule, based on the year; so the physician who adopts the percentage formula will be on the safe side in administering medicines to infants. Clark's rule also requires, for due equivalence to the percentage formula, undue robustness, in both girls and boys, from the age of seventeen; whereas the percentage formula assumes an average regular growth.

The relative simplicity of the metric measure over the English is brought out vividly in both tables, under either the percentage formula or under Young's rule.

Physicians would find it distinctly advantageous to adopt the percentage formula. It is simple and easy, and adequately accurate.

Simple Goitre in Children

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My original intention was only to report some cases of simple goitre in children, as any mention of this subject in the textbooks is conspicuous by its absence.

Though mention of this affection may be found as far back as Buddha, comparatively little is as yet known of the cause of the disease. A large number of dogmatic views explaining its origin have been advanced, but each one was replaced in turn by some other conception, which usually was supported more by the confidence of its advocate than by the validity of objective evidence. Some of the causes brought forth are almost fantastic in character, and are only of historical interest.

With the development of the study of the endocrine system, the nature and function of the thyroid is becoming somewhat clearer, and it is now considered one of the most important links in the chain of the glands of internal secretion. It controls metabolism and defends the body against infection. It is concerned with the metabolism of the iodine, storing part of it and distributing the rest. The iodine in the thyroid has been identified as a complex compound and is known as thyroxin. The blood supply of the thyroid is very rich, being five times as abundant as that of the kidney, and the whole volume of blood passes through the gland every hour. It is also closely connected with the sympathetic nervous system, and because of its rich blood and nerve supply, the thyroid is extremely vulnerable and is easily irritated and enlarged.

Medical tradition gives us forty-two causes for this enlargement. Water seems to have received the lion's share of the blame, and from time immemorial

goitre was considered a waterborne disease. Pliny mentions the fact that when young men wanted to evade military service, they drank water from certain wells for the purpose of developing goitre, and in Germany they spoke of the Kropfen-Brunnen.

Another etiological factor is the lack of iodine, which is still considered by weighty authorities on the subject as the cause of goitre. This theory is supported by the facts that the dwellers on the sea coast suffer comparatively little from this affection, due to the iodized air and the iodine found in the local salt and vegetation; and also by the fact that iodine is successfully used in the prevention and cure of goitre in men and animals. The faith in this theory is so generally accepted that one realizes the heresy in questioning it, and is only emboldened in so doing by certain facts which tend to break it. Well established phenomena, such as the decrease of goitre in fish when mercury or arsenic is placed in the fish tanks; the appearance of sporadic cases; the sudden outbreaks of epidemics; the prevalence of goitre in women; the development of goitre in soldiers and not in officers of the same division, are some of the facts which undermine the lack of iodine theory.

It is true that iodine when used in goitre of not too long standing, and in the absence of other pathological conditions, will often reduce the hypoplasia, for iodine, the principal compound of the thyroid hormone, reenforces this gland, which, owing to some interference, is no longer able to carry on its function of assimilating iodine. Thus one would be apt to infer that lack of iodine is not the cause *per se*, but that the addition of iodine is a remedy.

The search, then, for the etiology of goitre comes down to the search for the agents which interfere with the proper function of the thyroid. The indisputable facts like the sudden outbreak of goitre which is stopped by the change of water supply; the appearance of goitre in congested schools and barracks, which is ameliorated by improving the sanitary conditions; the occasional development of goitre after some infectious or focal disease; the experimental development of goitre in fish or animals when fed on the scrapings of fish tanks, or suspension of feces from a goitrous individual, all seem to point to a possibility of a common cause and lead one to consider goitre as due to some infection, be it bacteria or toxin. Some authorities lay it all to intestinal toxemia, substantiating their theory by reports of cases where goitre disappeared after the correction of the intestinal condition.

It is interesting to note that experimentally goitre can be produced in animals by overfeeding, especially when proteid food is used. There is evidently a closer relation between the condition of the organs concerned in digestion and assimilation of food, and the enlargement of the thyroid.

It has been asserted that goitre is caused by bacteria of the Trypanosoma family. But even the most enthusiastic advocates of the infectious theory, McCarrison among them, have not succeeded in isolating the specific bacteria or producing immunity, although they have made a serum. Though too little has been done in this direction for the findings to be taken as conclusive, yet from the study of the laboratory work of Dr. Frank Smithies, of Baltimore, who succeeded in demonstrating a low grade of infection in portions of the thyroid removed during operation; from the finding of infective and degenerative changes in the ganglia nerve trunks and endings in cases of toxic goitre, reported by Wilson and quoted by Frank Smithies, as well as from the well known characteristic of goitre above alluded to, one is inclined to infer that infection, though not fully understood, is nevertheless an important factor in the etiology of goitre.

The two apparently separate and distinct theories concerning the etiology of goitre, one of the insufficiency of iodine and the other of infection, are not only not distinct and independent, but are closely related and dependent upon each other. From the stated facts concerning the etiology of goitre, it is evident that there must be something—and that something of a toxic nature, which interferes with the normal function of the thyroid, and prevents it from assimilating sufficient iodine from the general economy, thus creating a state of iodine insufficiency. It is undoubtedly because of its disinfecting qualities that iodine is of therapeutic value in goitre. This disinfecting quality of iodine can most probably also explain the comparative infrequency of goitre among sea dwellers, for, being present in abundance in air and food, iodine acts as a detoxicant and inhibits the interference with the thyroid function. The question of etiology of the enlargement of the thyroid gland offers a wide field for speculation and surmise, as the entire subject of endocrinology is yet in its infancy. The most probable solution is that, owing to some interference, the metabolism is disturbed and a toxic condition is brought about. All toxic states exhaust the glands of internal secretion, and as the thyroid is the main detoxicant of the body, it bears the brunt of this condition, and is thrown into a state of dysfunction. The other glands undoubtedly also suffer in a greater or lesser degree, but owing to their anatomical position, they are not as easily observed.

So closely is the thyroid function connected with the general metabolism, that the only way to study the thyroid is to consider the patient as a biological whole, and the enlargement of the thyroid as a manifestation of some general disturbance. And it is only when we study the question of the enlargement of the thyroid from this angle, that we can understand how the various diseased conditions of the body may be contributing causes of the thyroid dysfunction, and can explain the occurrence of goitre following severe physical, nervous or mental strain, infectious and focal diseases, and especially the disease of the other glands of internal secretion. All these glands are closely related and mutually dependent upon each other, and as a rule, thyroid dysfunction follows any endocrinic disturbance, especially that of the ovary and the pituitary, with which it is synergistic. There is also evidently an intimate relation between the breaking up of the protein molecules and the thyroid function, for thyroxin is a compound of iodine and indol which is a split off the protein molecule by the intestinal bacteria. The thyroid hormone is also concerned with the intestinal flora, for in infants it appears simultaneously with the colon bacilli.

A few words concerning the enlargement of thyroid in women. The gland is slightly larger in the female, but normally it is at no time perceptible. The thyroid is frequently enlarged in girls at the time of puberty, and because of its occurrence at the time of life when the development is marked, the thyroid enlargement is spoken of as physiological. A careful study would show that this disposal of the subject is incorrect and is most unfortunate. Normally, the thyroid remains unchanged, or perceptibly so, all through the various periods of more marked growth of the body, as well as through the periods of strong emotions or infectious disease. The frequency of the occurrence of a certain condition should not make it physiological or normal, unless it is a constant nonfailing one hundred per cent. concomitant of a given process. This unfortunate nomenclature of physiological goitre may be responsible, to a great degree, for the neglect of the study of goitre.

Until recently the frequent occurrence of pains in the limbs of growing children, of acne in young people, of vomiting in pregnancy, of painful dentition, etc., were all looked upon with equanimity, and considered part and parcel of a physiological development. Deeper study, however, proved all these phenomena to be pathological and due to some metabolic disturbances of toxic origin. A closer study of goitre in young girls would also disclose some disturbing agent impairing the efficiency of the thyroid, which renders it incapable of carrying on its function. It would also disclose that the impaired functioning of the thyroid as demonstrated by its enlargement could, as a rule, be traced back to childhood. Owing to the fact that the thyroid grows slowly, and that the symptoms of the enlargement are extremely subtle, it often passes unnoticed, and is only recognized when it attains a considerable size.

The conditions that may cause this disturbance are manifold, and it would take us too far afield to enter into a discussion of the shortcomings of the educational, industrial and social systems responsible for the interference with the normal development of the child and youth. Suffice is to say that these unfavorable conditions are responsible in a great measure for a physical, emotional and mental overstimulation which interferes with the metabolism, and brings about a socalled toxic state, which, in its turn, causes an irritation and enlargement of the thyroid. The appearance of a goitre is no more physiological at puberty than at any other time, and it is always a pathological condition.

There may be some weakness or peculiarity in the organ of the female which accounts for the frequency with which the thyroid becomes the seat of pathological changes—most probably something that is being transmitted from generation to generation. As it is so closely related to the sexual organs, it probably partakes of the vulnerability of the latter, which are known to fall a prey to irritation and disease more quickly in the female than the male. There may also be a possibility that the anatomical peculiarities of women, namely, the proximity of the anus to the vulva with its abundant blood and lymph supply, numerous glands and mucous membrane, which afford continuous opportunity for a low grade of infection, causing an attenuated toxic state, may have some bearing upon the subject. If there should be any value in this hypothesis, some light may be thrown upon the prevalence of goitre in the female. The same factor may serve to explain the well known prevalence of pyelitis in the female. The higher emotional temperament in the female which, through the sympathetic nervous system, affects the volume of the blood supply of the thyroid gland, is undoubtedly also a contributing cause of irritation and consequent morbidity of the thyroid. These remarks would show that the subject of the cause of goitre, and especially its prevalence among women, is as yet a *terra incognito,* and indicate an urgent need for further study.

As simple goitre is not a fatal disease, its pathology can only be learned by the study of the thyroid as well as all the endocrine glands at all autopsies. If it were permissible to divert, I would here make a plea for the urgency of the education of the general public to the realization of the great value that lies in autopsies. One fully realizes the strong wall of opposition created by ages of religious training and superstition. Yet when the public is brought to understand that only by means of postmortem observations can knowledge concerning goitre be obtained, which might have prevented many early deaths, will opposition to autopsies gradually give way.

Whatever the ultimate cause of goitre will be found to be, it is an undisputed fact that it is on the increase and is indeed a menace to public health.

The growth of goitre is so slow and insidious, and its deleterious effect upon the body is so subtle and gradual, that it is frequently allowed to pass unnoticed, or when noticed is usually neglected. Yet a person with a goitre is undoubtedly below par, as the goitre, itself a result of some infection, renders the body more prone to other infections. The enlarged thyroid is likely to become the seat of colloid degeneration, adenomatous changes and malignancy. There is always a probability of the simple goitre taking on a toxic character and Graves's disease developing. The size of the gland has no direct bearing upon its activity. In the light of the present state of knowledge of the etiology of goitre, it is difficult to say whether the enlargement is due solely to irritation or is compensatory in nature, or is the result of both.

According to Nicola Pende, an enlarged thyroid is not always an overacting gland, but, on the contrary, is often in a state of hypofunction as the enlargement in many cases is due to an increase in the colloid substance, causing a decrease in the amount of the secretion of the active principle. This is well borne out by the known fact that few of the endemic goitres, which are usually large, develop Basedow's disease, and when they do, it is of a mild type. A careful study of the goitrous patient would show that there is always some deviation from the normal, and even the laity connect the presence of goitre with nervousness. The well known syndrome of neurasthenia may often be due to a latent condition of thyroid dysfunction, and any undue strain is likely, in some cases, to cause an explosion and produce a more or less serious form of Graves's disease. In short, goitre is a pathological

condition of varying severity and must be dealt with accordingly. Furthermore, there also lurks the danger of this condition affecting the offspring as the thyroid is apt to become gradually less active in succeeding generations. Statistics show that offspring of goitrous individuals are liable to myxedema and cretinism, and it is even claimed that the number of deaf mutes among them is higher.

It is held that goitre is one of the easiest diseases to prevent, for the administration of iodine has proved successful in both men and animals. While the use of iodine should be urged, we must not let ourselves be blinded by its effects, and remember that though it is quite frequently effective, it is so merely because it supplies the thyroid with the element which, under normal conditions, it should have elaborated from the general economy.

The eradication of goitre is to a great extent a communal problem, and the fact that many communities in various parts of the world have appointed goitre commissions, is evidence that they realize both the seriousness of the situation as well as their duty to ameliorate the condition.

In view of the large number of goitres found in children of school and even preschool age in this country, as well as abroad, it is most difficult to explain why practically no mention of the condition is made in textbooks published prior to 1923, for the careful attention given to other affections would preclude the possibility of accusing the author of lack of observation. Such absence is probably due to the fact that ordinarily goitre gives no marked clinical symptoms in childhood, and the child so affected is considered a well child. The study of the normal and apparently normal child is but in its infancy, and therefore the child who as yet shows no ill effects from the enlarged thyroid is as a rule overlooked. It is unfortunate that its presence is not discovered earlier, for the sooner the source of the irritation is found, the better are the chances of establishing proper metabolism and helping the normal development of the child. Since the condition of the thyroid is a clue to the child's general health, no examination of the child should be considered complete without an examination of the thyroid.

So likely are the physicians to pay no heed to the condition of the thyroid in the child, that not only are simple goitres overlooked, but even toxic goitres often remain unnoticed, and the affected child is merely classed as nervous and below par. One of such cases coming to the notice of the writer seems worthy of mention. While visiting a relative at a private boys' summer camp, a small thin lad of eleven, who noticeably lacked the poise of an ordinary camp boy, was pointed out as an exception in his response to the usual feedingup method employed in camps. Even a superficial examination of the child revealed quite a prominent thyroid, slightly protruding eyes, and tremor of the hand.

REPORT OF CASES

Case I.—Ruth S. had a "swelling in her neck" since she was about six years old. Had measles and chickenpox when a baby; otherwise was always well. Is ten years of age now, is well developed and has a prominent enlargement of the thyroid.

Case II.—Marie S., Ruth's sister, also had an enlarged neck since early childhood. Was an exceptionally well child, only was subject to frequent colds. Had chickenpox and measles when two years old. From the time she was six years old, she had had frequent attacks of tonsillitis. She is now thirteen years of age; is well grown and has a prominent goitre.

Case III.—Katherine L. had an enlarged neck since she was five years of age. She had suffered from obstinate constipation since babyhood. Had none of the children's diseases before the appearance of the large thyroid. The mother stated that she suspected that the child might have goitre, but as her own sister had something like it since early childhood and seemed well outside of being nervous, she paid no attention to it. Katherine had most of the children's sicknesses—all in a light form. She suffered from chronic bronchitis from the age of eight, and was cured by a winter in Texas. Is thirteen years old now, well developed, irritable and nervous, and is still suffering from constipation. Has quite a large goitre.

Case IV.—Mathilda A. always had a large neck, according to her mother's statement. A physician was consulted, who told her that the child would outgrow it. At six years of age had pleurisy and empyema; frequently complained of pain in the legs since she was eight years of age. The latter was attributed by a physician to the fact that the child was growing too fast. Mathilda is twelve years old now; is large for her age. Has a large thyroid.

Case V.—John B. had an enlarged thyroid from the time he was four and one half years of age. Was well as a baby. Had pyelitis at two, and a slight throat infection at three, which was mistaken for diphtheria and treated by an overdose of antitoxin. Reaction was unfavorable, and the boy showed a slight rise in temperature for several weeks, pointing to some low grade of infection which could not be located. The boy seemed to remain in a poor condition for a long while. Had a severe ear infection at four years of age, and about six months later the thyroid began to grow larger. Removal of the tonsils at five and one half had no effect upon the thyroid. Child showed a lack of resistance to infection; developed a cellulitis from a slight scratch; synovitis in the hip joint from a fall; a gangrenous appendix which developed within ten hours. Had good recuperative power and recovered quickly. The boy is nine years of age now, is well grown physically and mentally; is of an emotional nature. Has quite a prominent thyroid which seems to become larger after any strain or emotion.

Case VI.—Alice H. began to show an enlargement of the thyroid from the time she was four years of age. Previous to the time of the appearance of the goitre, suffered from frequent colds, an attack of bronchitis, and otitis media. Continued to be susceptible to colds; had an attack of pyelitis, vaginitis, and a slight nephritis. When eight years old had her tonsils and adenoids removed and bad teeth extracted, without any effect upon the thyroid. Is ten years old, is rather small for her age and underweight; is extremely intelligent. Has a prominent enlargement of the thyroid.

Case VII.—Mollie L.—The enlargement of the thyroid was first noticed when the child was about six and one half years of age, a half year after she had sustained a fracture of the elbow. There is a history of some bowel trouble when a baby, with a slight attack of scarlet fever. Had no serious illness since the accident; troubled with a twitching of the eyes. Is nine years of age now—tall for her age; is pale. Has a slightly enlarged thyroid.

Case VIII.—Ruth E.—Up to five years of age, was an exceptionally well child; well grown and a good eater; is stubborn and hard to manage. When six years old had an attack of capillary bronchitis and an otitis media. An enlargement of the thyroid began to develop, which continued to increase noticeably for about a year. Enuresis appeared at the age of seven. General health continued to be good. Is eight years old now and thyroid is enlarged, though slightly smaller than it was.

Case IX.—Jane P. had an enlarged neck from seven years of age, varying greatly in size at different times. Child had measles when a baby. Suffered from frequent attacks of indigestion and was always undersized. At twelve years of age, girl was strikingly small for her age, anemic and nervous. Thyroid was prominent. Is now fourteen years of age, has grown a good deal in height, gained in weight—condition of blood improved—thyroid decidedly smaller though still slightly enlarged.

Case X.—Marie C. always had an enlarged neck, for she remembers that her schoolmates in the primary grades used to remark about her large neck. Had the children's sicknesses in light form,—otherwise had apparently good health. Is twenty-five years old now, suffers from nervousness and irritability, and is considered a neurasthenic. Has a large goitre.

Case XI.—Sophie M.—According to her mother, "Sophie always had a very stout neck, but as she always was well and ate heartily," her mother said, "there was no use in looking for trouble." Child was seen first when eight years of age. Had quite an enlarged thyroid. When ten years old was brought to the office for treatment, for her mother then thought that child's neck had grown too stout. Is a large child for her age; of rather low intelligence, with that peculiar cunning that persons of low mentality often have—is stubborn. Is eleven years old now—thyroid is large.

Case XII.—Alice M. had an enlarged thyroid from the age of five. Had no serious illness; suffered from constipation; had mild attack of measles when four and one half years old. At ten years of age had articular rheumatism with endocarditis—recovery slow. The girl is now twenty years old—is well grown, anemic, nervous and has valvular heart disease. Thyroid is much enlarged.

Case XIII.—Minnie F.—From the time she was seven or eight years of age remarks were frequently made about her large neck. Was always well grown for her age. Was frequently ailing and had most of children's sicknesses; habitual constipation; frequent colds and sore throats. Is eighteen years old now—tall, muscles poorly developed; is pale; has enlarged tonsils, and bad teeth; has chronic appendicitis; an irregular heart; is extremely nervous and is classed as a neurasthenic. Has a large thyroid.

Case XIV.—Sadie F. had an enlarged neck from about eight years of age. She remembered that when a little girl, high neck dresses would not fit her. Was always considered cranky. Suffered from constipation and frequent colds; was never very strong—menstruated at sixteen years. The patient's sister has also goitre from early childhood. At nineteen the goitre became large and she was operated upon for it.

Case XV.—Eleanor D. had an enlarged neck ever since early childhood. No attention was paid to it as she developed apparently normally. As a baby had severe bowel trouble; had a slight attack of diphtheria and mumps at five. Is thirteen years old now—is tall and thin—is a poor eater, is bright and ambitious. Has quite a large goitre.

Case XVI.—Elizabeth S.—According to her mother's statement, the child always had a prominent neck, but as the mother's sister was similarly affected, and was apparently well, she felt no concern about her daughter. Child had pneumonia at six years of age, and scarlet fever at eight. When twelve years of age, an irregularity of the pulse was discovered, which fact, as well as the enlarged thyroid, was attributed to nervousness. Came under observation at fifteen years of age. Is now sixteen years old; is extremely nervous; is suffering from digestive disturbance; has a rapid and irregular pulse. Has a large thyroid.

PROGNOSIS

The prognosis of simple goitre in children is good as far as mortality is concerned, but unsatisfactory as to its eradication.

TREATMENT

The treatment of the cases reported consisted in searching and correcting as far as possible any condition showing deviation from normal, in building up the general health, and in the administration of iodine or of thyroid extract where the nervous and circulatory condition did not contraindicate their use. The result varied with the cooperation of parents or patients. In none of the cases under observation, not even in those where the treatment began at the inception and extended over a period of five to six years, has the goitre disappeared entirely, though in some it has perceptibly decreased. The removal of tonsils did not seem to have much effect upon the size. Though the number of cases observed is too small to warrant the making of general deductions, the rather unsatisfactory result of their treatment only emphasizes the importance of prophylaxis.

A SUMMARY OF THE TWENTY CASES OBSERVED

There were nineteen girls and one boy. The age of the children at the time the enlargement of the thyroid was first noticed ranged from four to eight. The majority of the children were well grown for their age. In many cases there was a history of goitre in the family. A great number of them suffered from constipation.

There was usually a history of some infectious disease or local infection prior to the appearance of the condition, but the frequency with which chil-

dren suffer from these diseases, as well as the comparatively small number of cases under consideration, preclude the making of any deduction as to their etiological significance.

The growth of the goitre was as a rule progressive but slow—occasionally it was of a transitory nature, the relapses being caused by a temporary congestion of the thyroid from some strain or emotion. The enlargement did not disappear entirely in any of these cases. It either persisted after puberty was well established or even kept on getting larger. In some cases, however, the enlargement became smaller as the child developed and grew stronger with the advance of puberty.

CONCLUSION

1. Goitre is on the increase and is a menace to the health of the present and future generations.

2. The etiology of goitre is as yet not well established though overwhelming evidence is pointing to some factor of an infectious nature.

3. The endocrine glands should be studied during every autopsy, and more postmortem examinations should be encouraged.

4. The prophylaxis should embody the strictest attention to public, home and personal hygiene in its widest scope, and until the primary cause of goitre is found, iodine should be administered to all expectant mothers in goitrous regions and to goitrous mothers everywhere, to small children in goitrous regions, and to all children everywhere showing the slightest tendency towards the enlargement of the gland.

There is one thing that must be borne in mind, and that is as malaria was not considered a conquered disease until the plasmodium was found, and syphilis not until the spirochetes were discovered, notwithstanding the fact that remedies for both affections had been known for ages, so will goitre remain invincible until the true cause of it is found.

30 EAST FIFTY-EIGHTH STREET.

Pyelitis in Infants and Children*

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I shall first outline the diagnosis and treatment of pyelitis as it is encountered in daily routine, and then state some of the recent developments of our knowledge from the laboratory and the clinical experience of the urologist.

In the experience of the pediatrist pyelitis is diagnosed almost entirely from the urinary findings, and here I may insist that the difficulties of obtaining the urine of the young child have been greatly exaggerated. The use of cotton to collect the fluid is not practicable, because the formed elements of the urine are strained out and the test urine is a clear solution which is available only for chemical tests. For collecting urine I use a widemouthed bottle for girls and a test tube or condom for boys; these containers to be strapped to the body with adhesive plaster. As a reserve resource we have, of course, the use of the catheter. Urine obtained by any of these methods should neither be allowed to deposit nor be centrifugalized, because we do not want a concentration of the formed elements for microscopic study, but a suspension of these in the fluid portion. What is wanted is a leucocyte count of this suspended urine. From another angle, if the urine stands, alkalinity, should this be the reaction, may dissolve the leucocytes. If there are as many as six leucocytes or more to the microscopic field the diagnosis of pyelitis may be confidently made. Some clinicians even regard two leucocytes as suspicious of pyelitis. Examinations should be followed up for several days, and at least one examination on each of three successive days before a final diagnosis, because one or two tests may be negative even if the disease is present.

*Read before the Eastern Medical Society of the City of New York, April 13, 1923.

Having made our diagnosis the treatment should be as follows: rest in bed, sponge or lukewarm baths for hyperpyrexia. An abundance of fluid should be given, for a seven months old child about one pint of water, to an older child two pints daily. If fluids cannot be given by mouth, they can be supplied through stomach or nasal tube or by enteroclysis. Should vomiting persist, hypodermoclysis must be resorted to. Enough water must be given so that specific gravity of the urine is below 1012.

As to food, young infants should receive milk diluted with alkaline water, some cereal and fruit juice. Older children may have bread and butter, cereals, stewed fruit, cooked vegetables, and pudding. Göppert and Langstein give, in the afebrile pyelitis cases, meat and eggs in addition to the foods mentioned above.

Most cases of pyelitis in children are due to the bacillus coli which flourishes best in an acid medium. Alkalies should be freely administered, these also having a diuretic effect. Potassium citrate well diluted is given in doses proportional to the age of the child beginning with fifty to one hundred grains daily in divided doses and increasing to one hundred and fifty grains if necessary. The only way to determine the proper dose is by watching the reaction of the urine. As soon as the urine becomes strongly alkaline, and the fever and other symptoms subside, the dose should be diminished. At times it is difficult to alkalinize strongly acid urine by ordinary doses of potassium citrate, and large doses will occasionally upset the stomach and cause diarrhea. This drug must be substituted by sodium bicarbonate, two or three teaspoonfuls in twenty-four hours divided into six or seven doses. Moreover, sodium bicarbonate may be added to food to disguise its bad taste and

may also be given per rectum: two or three ounces of a five per cent. watery solution, every two or three hours, until the urine becomes alkaline. If after ten days of treatment no benefit is apparent, urotropin should be substituted in daily doses of fifteen to twenty-five grains suitably divided. But when this drug is given, an acid concentration of the urine is desirable, otherwise the formaldehyde which exerts the antiseptic effect will not be broken off from the urotropin. To obtain this acid concentration, we should give large doses of acid sodium phosphate, twenty-five to forty grains daily, of course in divided doses. The urotropin treatment should also be given for ten days, after which if there is no further improvement a return to alkaline therapy may be indicated.

Should the case still be obstinate one may try vaccinotherapy, but aside from a slight transitory improvement, I have never seen positive results from this method, nor has bladder irrigation been of service unless cystitis is actually present. It must be borne in mind that while the patient may be clinically cured, the urine may still contain pus and bacilli.

Quite recently Cowie (1) has obtained some good results from protein therapy. He used horse serum in nine patients with apparent success and in two of these cases the pus disappeared completely from the urine after the third injection of three c. c. of the serum.

For the sake of completeness I may now quote from the province of the laboratory worker and urologist.

According to laboratory investigators our knowledge of simple or uncomplicated pyelitis in early life is incomplete. Few die of this affection, and thus few autopsies are on record. Most pyelitis seems to be associated either with nephritis or cystitis, so that the clinical picture of uncomplicated cases is difficult to obtain. Of great interest is the remote prognosis. Owing to the tendency to spontaneous recovery it is difficult to isolate any form of efficacious treatment, but it is often found that the recovered patient still has pus in the urine (or bacilluria), and it has been thought that these latent cases are responsible for much of the pyelitis of adolescent and adult years, including pyelitis of pregnancy. The evidence both for and against this supposition is considerable and, of course, is too conflicting to permit of a decision.

With the advance of clinical urology it has become inevitable that the subject of pyelitis in childhood appears on the borderline between urology and pediatrics. It has become possible to cystoscope even male infants, and to perform ureteral catheterization at the same time. Naturally only the severe and persistent case which has been refractory to milder methods should be the one to reach the urologist, but when we consider that these severe forms are usually complicated with nephritis or cystitis it is conceivable that any case of pyelitis may be looked on as essentially surgical. The use of the x ray is also valuable for excluding the presence of stone. It is evident that pyelitis due to stone should be promptly recognized before any treatment is instituted.

In making a diagnosis it is also important to distinguish between ascending and hematogenous forms of pyelitis, a subject of which our knowledge has been more or less speculative. In order to throw light upon it, considerable experimentation has been carried out in recent years and we now have a fairly clear idea of the distinction between the two. It has been shown in the rabbit that after blood infection, lesions appear in the cortex of the kidney and the papillæ of the pelvis. In fact the pelvic lesions are sharply localized in the papillæ, the lateral aspect being free. The exact opposite is seen when infection from the bladder has been set up, for now the papillæ are free and the rest of the mucosa infected. It is not necessary that the infection be carried up through the lumen of the ureter, for it may occur through the surrounding lymphatics. Helmholz, formerly associated with Kretschmer of Chicago and now with the pediatric department of the Mayo clinic, is a leading experimenter along these lines, and his results have been corroborated from outside sources.

Experiment has shown that while obstruction in the urinary tract below the kidney pelvis may favor the development of ascending pyelitis, the latter may occur in its absence from causes which are not fully understood. In like manner, if there is a case of pyelitis of unknown origin, the presence of coli bacilli or infectious cocci in the blood is not conclusive evidence of a hematogenous origin. Ascending pyelitis may be brought into etiological relationship with the known fact that the urine in the bladder may at times regurgitate into the kidney pelvis, not only in diseased conditions but in the normal subject. Any condition which causes thickening in the wall of the bladder or in the ureter may conceivably be responsible for this regurgitation—anything whatever which can cause partial obstruction of the urinary tract below the pelvis.

Helmholz states that there is absolutely no correlation between the clinical symptoms and pathological findings of pyelitis, because of the fact that very different conditions cause the same syndrome. He adds that a clinical diagnosis of pyelitis simply cannot be made with any degree of certainty. Many conditions which involve pyelitis have but a single symptom in common, pyuria. In regard to the active rôle of the Streptococcus lacticus in these cases, as shown apparently by Langer and Soldin, Helmholz was unable to confirm the existence of this association; for he found this germ in only a small number of his cases. In the majority, especially when solid culture media were used, the results were negative. The well known pediatrist Thiemich of Breslau records that in the cases of clinical diagnosis of pyelitis the bladder and kidney pelvis were often found normal at autopsy while the kidney was the seat of lesions. This statement seems to be upheld by the results of experiment on animals. Abscess of the cortex (glomeruli) of the kidney seems to be mistaken for pyelitis in the clinic, and we have seen that in hematogenous infection, renal lesions are found in association with papillitis (medullary portion).

In regard to treatment, Kretschmer and Helmholz (2) showed that pyelitis could be treated even in young infants, including boys as well as girls, by

washing out the kidney pelvis with a solution of nitrate of silver, after diagnostic use of the cystoscope and preliminary x ray to exclude the possibility of stone in the pelvis. Another disease which must be excluded before lavage, is renal tuberculosis, and by the usual tests, comprising bacteriology and inoculation experiments. Naturally, only the chronic case rebellious to ordinary measures is subjected to instrumental intervention. The criterion of cure in these as in all cases must be, that the urine is rendered sterile and free from all formed elements. Absolutely no attention should be paid to ordinary freedom from general symptoms, for perfect health seems compatible with latent microbism in these cases.

In comparing my personal experience with the findings of the laboratory man and urologist there may seem to be considerable want of harmony, but this is readily explained. It is not denied anywhere that mild measures usually suffice in pyelitis, for the latter has a strong spontaneous tendency to recover. In obstinate cases and when the urine refuses to clear up despite the apparent good health of the patient, the case, in theory at least, could be transferred to the urologist, but the urological treatment of infants is not only extremely drastic but only a small number of specialists have thus far resorted to it and it is doubtful if it ever comes into familiar use. Apparently few men have practised cystoscopy and ureteral irrigation on boy babies and young male children and if these methods are ever commonly used they will doubtless be limited to the obstinate case.

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50 East Ninety-sixth Street.

A Simple Method of Preparing Lactic Acid Milk*

M. BERNARD BRAHDY, M.D.
New York

During the past year, many articles have been written on the results obtained in the feeding of infants with lactic acid milk. All reports which I have found state that the milk formulæ were prepared according to the method described by Marriott and Davidson in 1923 (1). This method is to add lactic acid (U. S. P.) drop by drop to the boiled cooled milk, stirring continuously, followed by the addition of corn syrup. This necessitates great care on the part of the mother, and consumes much time, especially, as happens frequently, more than a hundred drops are necessary. Gleich (2) suggests that the milk mixture be stirred six times between the addition of each drop of lactic acid and that it should take at least twenty minutes to make a pint of the formula. He states that in many cases both in the dispensary and in private practice he was compelled to change his lactic acid formulæ to other mixtures, mainly it seems to me, because the formulæ were not made properly. In our dispensary, it was formerly difficult, even with the able assistance of the social service department, to teach mothers how to prepare the formulæ properly by the drop method.

For some time we have been using a simpler method, which is easier to explain to the mother, reduces the time of preparation to a few minutes, and gives a finer curd when finished than is obtained by the drop method. It consists of mixing in a cup the desired amount of corn syrup with an equal quantity of water, and the prescribed amount of lactic acid. This acid syrup mixture is then poured into the milk (boiled or raw as desired), or milk and water, and stirred for a minute.

No special care is needed in adding one solution to the other. There is no difficulty in making the mother understand this method. We explain it to her in the dispensary, and in almost all cases the social service worker on her visit the next day, has found that the mother was preparing the formula correctly. It takes less than five minutes to make any amount of a formula. The patients who have been on mixtures prepared by the acid syrup method, have shown as good result clinically, as those kept on mixtures prepared by the drop method. Dr. A. Waltz of this hospital has made hydrogen ion determinations and reports (personal communication) that the resulting hydrogen ion concentration is the same in the two methods of preparation.

We are now using the acid syrup method of preparation for ward cases. A stock syrup solution as suggested by Marriott (3) consisting of forty-five parts of corn syrup and fifty-five parts of water is used for convenience. This gives about one ounce of sugar by weight for each two fluid ounces of syrup solution. The required amount of acid is mixed with this diluted syrup. The acid syrup mixture is then poured into the milk, stirred a few times, and is ready for the bottle.

SUMMARY

I have described a method of preparing lactic acid milk which is easy to explain to the mother, saves time, and gives results which are satisfactory. The method, although not original with me, is published because I believe it will be of value to the profession.

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*From the Medical Department of the Children's Hospital of Philadelphia.

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ORIGINAL COMMUNICATIONS

THE COMMON COLD.
Harmon Smith, M.D., Sc. D., New York 577
INDUCED INCREASE IN WHITE BLOOD CELLS.
Burr Ferguson, M.D., Southampton, England 580
TREATMENT OF DISEASES OF THE MAXILLARY SINUS.
Bernard J. Cipes, D.D.S., Mount Vernon, New York 582
INFLUENCE OF RÖNTGEN RAYS ON THE ENDOCRINE GLANDS.
Harry Benjamin, M.D., New York 585
EFFECT OF ULTRAVIOLET LIGHT ON BLOOD CHEMISTRY.
Donald McCaskey, M.D., New York 589
CLOSURE OF BRONCHIAL FISTULA BY USE OF RADIUM.
William L. Harris, M.D., Providence, Rhode Island 590
HYDROPHOBIA AND CARRIERS.
H. Rahmet Bey, M.D., Cairo, Egypt 591
DECHOLESTERINIZATION.
Arthur N. Tasker, M.D., Washington, D. C. 595
ALLERGIC HIGH BLOOD PRESSURE AND ITS CONTROL BY EPINEPHRIN.
I. S. Kahn, M.D., San Antonio, Texas 596

SYMPOSIUM ON PEDIATRICS

ADENOIDS IN INFANCY: IMPORTANCE OF EARLY TREATMENT.
William Wesley Carter, M.D., F.A.C.S. clxxvii
CONSERVATION OF HEARING IN CHILDHOOD.
Ralph Almour, M.D., New York clxxviii
ACUTE INTUSSUSCEPTION IN INFANTS.
Robert L. Gibbon, M.D., Charlotte, North Carolina clxxx
DOSES FOR CHILDREN.
A. D. Bush, M.D., Emory University, Georgia clxxxiv
SIMPLE GOITRE IN CHILDREN.
Anna S. Wilner, M.D., New York clxxxv
PYELITIS IN INFANTS AND CHILDREN.
A. Hymanson, M.D., New York cxc

CONTENTS CONTINUED ON PAGE 5.

Vol. CXX. No. 12
Whole No. 2295

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M. Bernard Brahdy, New York, N. Y. cxcii

PRACTICAL THERAPEUTICS

Iodine in Treatment of Hyperthyroidism.
J. Arthur Buchanan, M.D., M.S., Brooklyn, New York..... 599
Bismuth in the the Treatment of Syphilis. (*Concluded*)
Hans J. Schwartz, M.D., and Oscar L. Levin, M.D., New York..... 600

HISTORICAL MEDICINE

Galen's Commentaries on Kidney Disease.
Jonathan Wright, M.D., Pleasantville, New York..... 603
Contributors to the Science of Medicine: *Carlos Finlay*..... 605

EDITORIAL ARTICLES

Music as Medicine..... 608
The Care of Infants..... 608
Some New Diagnostic Signs in Scarlet Fever..... 609
"Children's" Diseases..... 610
The Cause of Rickets..... 610
Disease and Its Treatment..... 611
Homicide Statistics..... 612
Obituary 612

FOREIGN CORRESPONDENCE

London, Geneva and Latin America Letters.....614-617

CONTENTS CONTINUED ON PAGE 7.

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BOOK REVIEWS

Pediatrics, Volume IV. *Isaac A. Abt* 618
Lehrbuch der Kinderheilkunde. *Bernhard Bendix* 618
Strahlenbehandlung bei Kinderkrankheiten. *W. Birk und L. Schall* 618
The Happy Baby. *L. Emmet Holt, M.D.* 618
Physiopathologie de l'Appareil Digestif du Nourrisson. *Dr. Nobécourt* 619
Sauglingsheilkunde der Täglischen Praxis. *Prof. Dr. K. Blühdorn* .. 619
Clinique Médicalè des Enfants. *P. Nobécourt* 619
Atlas der Hautkrankheiten. *A. Jesionek und Dr. Mravek* 619
Angina Pectoris. *Sir James MacKenzie* 619
Les Ferments des Leucocytes. *Noël Fiessinger* 620
Pathological Technique. *F. B. Mallory, M.D., and J. B. Wright* 620
Maladies de la Face et due Cou. *Henri Aboulker* 620
Besonnte Ergangenheit. *Dr. Karl Ludwig Schleich* 620
Taking the Literary Pulse. *Joseph Collins, M.D.* 621
How Is Your Heart? *S. Calvin Smith, M.D.* 621
Dædalus or Science and the Future. *J. B. S. Haldane* 621
Revolution 621
Ariel. *André Maurois* 622
Old New York. *Edith Wharton* 622
Medicoliterary Notes 622

ABSTRACTS FROM CURRENT LITERATURE

Pediatrics 624
Hernia 626
Medicolegal Notes 628

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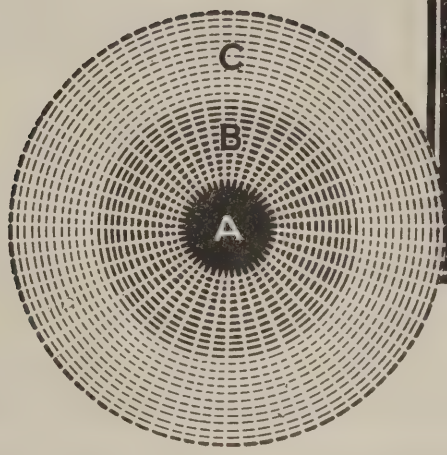

Antiphlogistine poultice, some hours after application to inflamed area. Centre is moist, where exudate has been drawn from the congested tissues. Periphery, covering normal surrounding tissues virtually dry.

This chart shows the Osmotic action of Antiphlogistine

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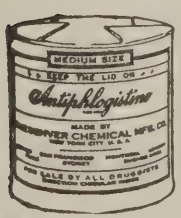

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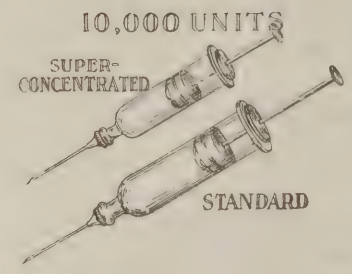

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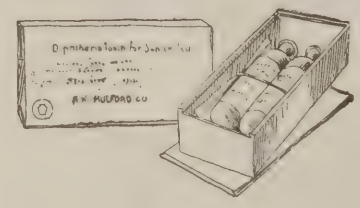

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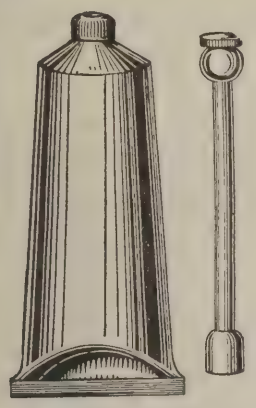

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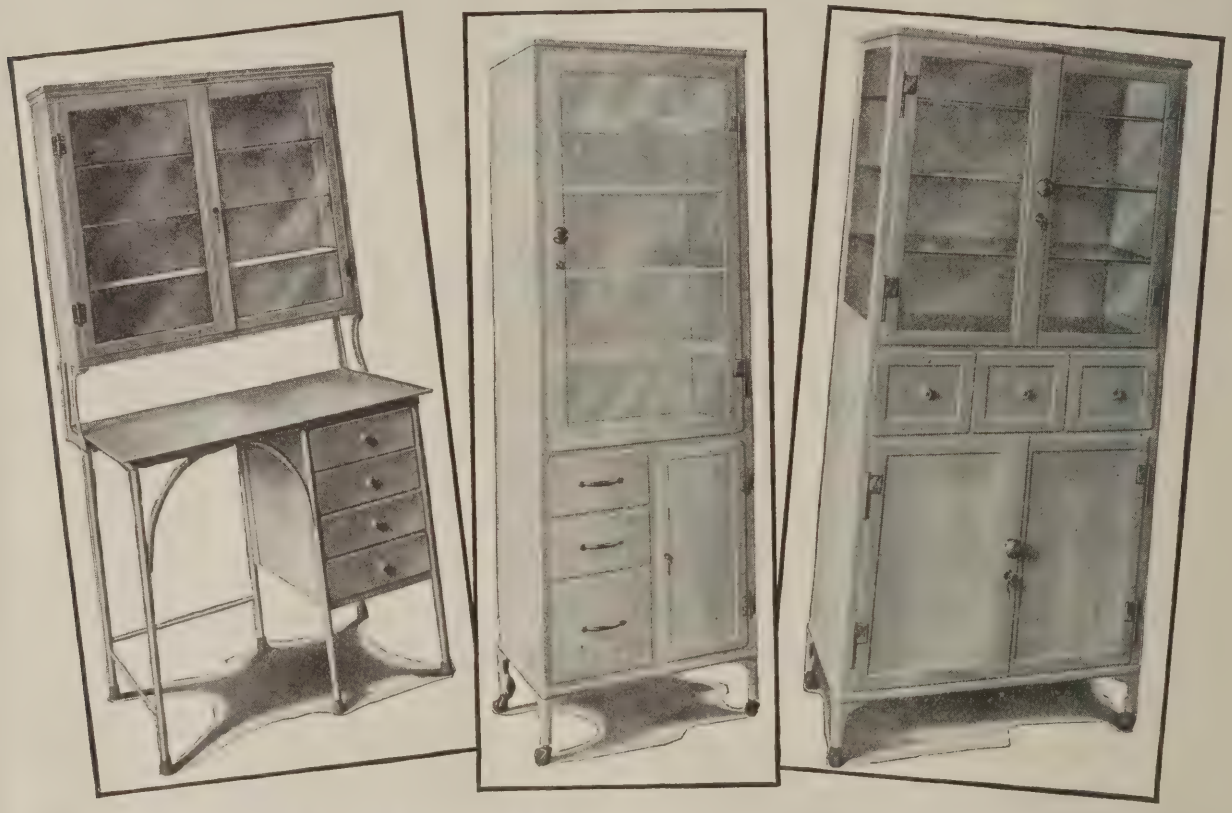

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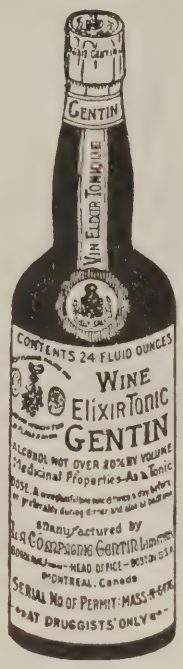
Accurate analysis of all the endocrine irregularities underlying such conditions is impossible. A general Hormone deficiency is the rule—General Hormone feeding or restoration by the use of *pure liquid Hormones* is, therefore, indicated and in practice has been found to give satisfactory results. *It does not preclude, but will supplement and reinforce specific endocrine treatment in proper cases.* Feeding all the Hormones reinforces a natural condition to which the system is accustomed and accommodated. COLWELLS HORMONES *is unique in its usefulness for this purpose.*

COLWELLS HORMONES contains the essential Hormones wholly free from all proteins or toxins, in a very palatable vehicle. It is non-alcoholic. The solution is a mild one, and the dosage can be arranged readily to meet the requirements of each specific case. It can be varied as to quantity and frequency until Hormone deficiencies are overcome and the emergency requirements complied with.

A free sample, 2 oz. bottle, will be furnished upon application.
Correspondence solicited.

COLWELLS
Pure Liquid
HORMONES

THE COLWELL PHARMACAL CORPORATION
25 Church St. **New York City**



The Ideal Form of Iodine Treatment

Wine Elixir Tonic Gentin

Each ounce of Wine Elixir Tonic Gentin contains 1/12 of a grain of Iodine with some simple aromatic and restorative tonics of which Calisaya is the most important.

Following the regulations of the French Codex, we are using the very best of Tarragona wine as vehicle for our preparation.

We hope that GENTIN will find favor with you

IF YOU PRESCRIBE IODINE

Gentin is very palatable, well tolerated and reliable.

A 24 ounce sample bottle of Wine Gentin will be forwarded on physician's request, free of all cost.

At Druggists Only, $2.00

LA COMPAGNIE GENTIN LIMITED

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Palliate Pain with Peralga

—the Non-Narcotic Analgesic Sedative

PERALGA

Partial and frequently a complete substitute for Morphine and other Opiates.

For the symptomatic treatment of "Headaches" due to menstrual and climacteric disorders, nervous conditions, hysteria, mental exhaustion, migraine, hemicrania, eye-strain.

A material aid in the management of dysmenorrhea and menorrhalgia; pains of locomotor ataxia, of the acute gall-stone attack, of malignant tumors; traumatic pain, post-operative or from injury; drug addiction and insomnia due to pain.

Furnished in

***Tablets,* 3 grains, Tins of twelve and Bottles of one hundred.**
***Powder,* Bottles of one ounce and half-ounce.**

Information and Trial Material from

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The Trade Mark "PERALGA" is registered the U. S. Pat. Off. under No. 160960.

Physicians tell us:

That in all cases of hyper-secretion from the genito-urinary mucous membranes, Listerine, alone or with the addition of astringents or medicaments, serves a most useful purpose.

Enclosed with every bottle of Listerine, there is a circular discussing in detail the many uses of this product. We believe you will be interested in giving this circular a careful reading.

LISTERINE

—the safe antiseptic

Made by

LAMBERT PHARMACAL COMPANY

NEW YORK ST LOUIS TORONTO
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Also makers of Listerine Tooth Paste, Listerine Throat Tablets and Listerine Dermatic Soap

Many Doctors

Are telling patients hot breakfasts can now be prepared in 3 to 5 minutes

If you subscribe to the "hot oats and milk" breakfasts now so widely advocated, we believe you will be glad to know of this new Quaker Oats—Quick Quaker.

We perfected this new Quaker Oats for busy wives and mothers, who, because of limited time, were serving oats too seldom. They cook thoroughly in 3 to 5 minutes. That's as quick as plain toast.

Quick Quaker Oats are the same as regular Quaker Oats. They are rolled thinner and partly cooked. They cook faster; that is the only difference. All that rich Quaker flavor is retained. All the high quality of oats and milling that make Quaker the top brand of the world.

May we suggest that where oats breakfasts are indicated, you will mention this quick cooking feature to your patients.

Standard full size and weight packages—
Medium: **1¼ pounds;**
Large: **3 pounds, 7 oz.**

Quick Quaker

Cooks in 3 to 5 minutes

Quaker Oats

The kind you have always known

THE STANDARD

LOESER'S INTRAVENOUS SOLUTIONS

CERTIFIED

SODIUM THIOSULPHATE

For arsphenamine dermatitis, arsenic, mercury and other metallic poisoning, dermatitis of organic origin.

Loeser's Intravenous Solution of Sodium Thiosulphate, 10 c.c. contain 1 gram (15 grains) of Sodium Thiosulphate U. S. P., a 10% solution.

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Producing ethical intravenous solutions for the medical profession exclusively.

The Management of an Infant's Diet

Malnutrition, Marasmus, Infantile Atrophy, Athrepsia

Mellin's Food	**8 level tablespoonfuls**
Skimmed Milk (1% fat)	**9 fluidounces**
Water	**15 fluidounces**

This mixture contains 56.61 grams of carbohydrates, thus supplying material that is utilized rapidly for heat and energy. The predominating carbohydrate is MALTOSE, which has the highest point of assimilation of any of the sugars, is immediately available as fuel and may be safely given in comparatively large amounts. The daily intake of protein from the employment of this formula is 15.54 grams, an amount calculated to be sufficient to replace depleted tissues and to provide for new growth. There is present in the mixture 4.32 grams of salts for replenishing inorganic elements.

The suggested modification furnishes nutrition in keeping with the character and amount of food elements best adapted to the particular demands of infants in an extreme state of emaciation and serves well as a starting point in attempting to meet the nutritive requirements of these undernourished babies.

Mellin's Food Co., 177 State Street Boston, Mass.

Tonic Arsenic Therapy
By Painless Injections

SOLARSON

Trademark Reg. U. S. Pat. Off.

Brand of **CHLORARSENOL**

Superior to cacodylates because of greater uniformity and reliability of action. Despite its high arsenic percentage is virtually non-toxic in medicinal doses.

INDICATIONS: Anemia, Chlorosis, Malaria, Tuberculosis, Neuroses, Chorea, Leukemia, and Cutaneous Diseases.

HOW SUPPLIED: In ampules of 1.2 c. c., boxes of 10.

Pamphlet on Application

WINTHROP CHEMICAL COMPANY, Inc., 117 Hudson St., New York, N. Y.

"For those who suffer from various foot troubles,"

an intelligent and observing shoe salesman was recently overheard to say, "the routine wearing of

O'Sullivan's Heels

is considered by most doctors a very desirable detail."

"And," he continued, "I know this is so because of the increasing number of people who come here to purchase shoes, and inform us their doctors have told them to be sure to have O'Sullivan's Heels attached --- and no others.

"It is easy to understand this preference, for the greater resiliency of O'Sullivan's Heels not only exercises and strengthens weakened foot muscles, but by preventing shock relieves muscular tension with its resulting pain and ache.

"Yes, sir, medical men today are keenly alive to the hygienic value of O'Sullivan's Heels."

O'Sullivan Rubber Co., Inc. New York City

COMBINES the delightful qualities of effervescence with the well-known digestive properties of Peptenzyme.

The powerful and effective action of Peptenzyme, supplemented with the tonic and refreshing effects of effervescence, thus insures both

PERMANENT BENEFIT AND PROMPT RELIEF

in gastralgia, nervous and fermentative dyspepsia, flatulence, atonic indigestion, and to relieve the gaseous fermentation that usually causes so much discomfort in digestive disorders.

It is palatable to the nth degree and gives the physician a cooling and refreshing beverage, free from any hint of medicine, yet pregnant with therapeutic value.

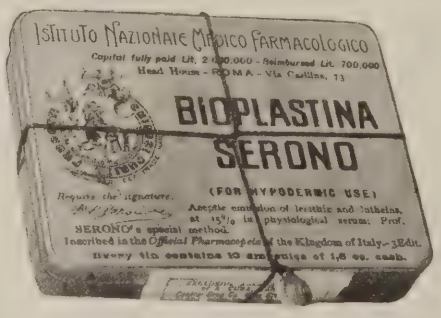
Converts the Distresses of Indigestion into a Smile

SOMETHING NEW

PEPTENZYME EFFERVESCENT GRANULES

REED & CARNRICK
JERSEY CITY, N.J.

In Tissue Exhaustion



A product of the Pharmaceutical Laboratory, Istituto Nazionale Medico Farmacologico, Rome, Italy.

the essential elements must be replaced and the processes of metabolism stimulated.

In the emulsion of lecithin and lutheins as represented by

BIOPLASTINA SERONO

will be found a rational agent for the purpose.

The bioplastic function of BIOPLASTINA SERONO is shown by its power to increase cellular activity and to stabilize metabolism.

BIOPLASTINA SERONO is the essential substance of the cellular nucleins, and introduces into the system lecithin and lutheins, the active and phosphoric substances of embryon. Under its use follows an increase in appetite, red cells, weight and muscular strength.

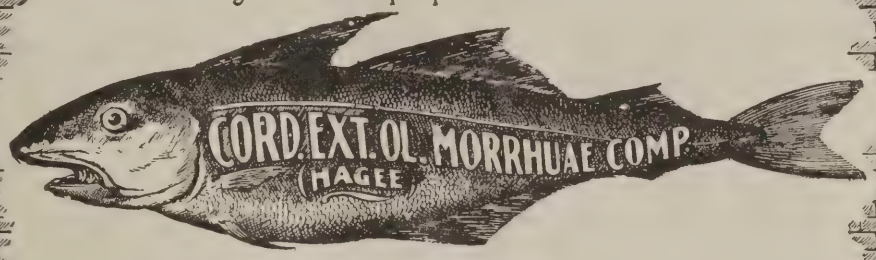
As an adjunct to mercury in the treatment of syphilis, especially in the presence of cachexia, the use of BIOPLASTINA SERONO is definitely indicated. Also in anemia, rachitis, nervous exhaustion, premature senility and similar states, it will be found of more than ordinary worth.

Sample and literature sent on request.

CENTRAL DRUG COMPANY, 51 Spring Street, New York City

Sole Agents for United States, Cuba, Mexico and Canada.

FORTIFY
THE TISSUES OF THE BODY
if you would secure for your patients an
increased immunity against bronchial and pulmonary infections.
A valuable agent for the purpose is



regularly and systematically used.
It is everything that plain cod liver oil is except objectionable in taste, a quality that increases its therapeutic worth.

EACH FLUID OUNCE OF HAGEE'S CORDIAL OF THE EXTRACT OF COD LIVER OIL COMPOUND CONTAINS THE EXTRACT OBTAINABLE FROM ONE-THIRD FLUID OUNCE OF COD LIVER OIL, (THE FATTY PORTION BEING ELIMINATED), FOUR GRAINS CALCIUM GLYCEROPHOSPHATE, FOUR GRAINS SODIUM GLYCEROPHOSPHATE, ONE HALF GRAIN SALICYLIC ACID, (MADE FROM OIL WINTERGREEN), WITH GLYCERIN AND AROMATICS.

Easily Assimilated

FREE FROM GREASE AND THE TASTE OF FISH

Supplied in sixteen ounce bottles only. Dispensed by all druggists.

Katharmon Chemical Co., St. Louis, Mo.

The best is none too good for intravenous use

ENDOSAL

Indicated in

NEURITIS
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A 20 mil ampoule contains
15 gr. Sodium Iodide
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Endosal has brought us a mass of clinical data, showing favorable and rapid reaction when used as indicated, and confirming our confidence and claims.

Physicians and patients without exception have been fully satisfied with accomplished clinical results.

Let us send you today a box of either 6 ampoules, price $5; 25 ampoules, $18.75 or 100 ampoules, $66.65.

If you have not used ENDOSAL—now is the time to order a supply. Literature sent on request.

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GUDE'S PEPTO-MANGAN

(*Liquid—Tablet Form*)

furnishes the absorbable organically combined iron

that encourages the construction of red cells.
The red cells include the Hemoglobin—
The hemoglobin supplies the Hematin—
The hematin combines with the iron—
The iron carries the oxygen—
The oxygen stimulates the waste and repair
that constitutes life and living.

It is thus of unquestioned value in **ANEMIC, CHLOROTIC and DEVITALIZED CONDITIONS.**

Our Bacteriological Wall Chart or our Differential Diagnosis Chart will be sent to any Physician upon request.

Literature, samples and further information from

M. J. BREITENBACH CO.
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Rx *Campho-Phenique Antiseptics*

PHYSICIANS—

Try these Prescriptions on your next case and note the result. ***Campho-Phenique Liquid*** has been tried and tested by many Physicians with excellent results

SUGGESTIONS.

Catarrh (Nasal)

℞ Campho-Phénique Liquid.....ʒ i.
Olive Oil [pure].....ʒ iv.
M. Sig. Use as a spray.

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℞ Campho-Phénique Liquid.....ʒ ii.
Olive Oil [pure].....ʒ iii.
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Olive Oil [pure].....aa ʒ iv
M. Sig. Pencil over surface.

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CAMPHO-PHENIQUE LIQUID, Small Size 30c, Large Size $1.20
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Physician's Samples and Literature on request.

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The ADRENALIN *Group*

WHEN you specify "Adrenalin, P. D. & Co." in your prescriptions or orders, you give your patient the benefit of more than twenty years of manufacturing experience with the pressor principle of the suprarenal gland, discovered by Takamine in 1900 and placed upon the market by Parke, Davis & Company in 1901.

Adrenalin is a life-saver in more senses than one. Its effect upon the arterial system and the heart is phenomenally swift and potent; while for antiphlogistic effect on the inflamed mucosa in nasal, laryngeal, rectal and genito-urinary conditions, it is unexcelled. Invaluable in shock, collapse, serum rash, and to control operative hemorrhage. The one reliable symptomatic remedy for asthma.

Among our Adrenalin preparations the following deserve to be constantly kept in mind:

ADRENALIN INHALANT (1:1000)

Indicated in acute, subacute or chronic rhinitis, pharyngitis, tonsillitis, laryngitis; in scarlatinal angina, and in hay fever. A pronounced astringent.

ADRENALIN OINTMENT (1:1000)

Used for the same purposes as the Inhalant, and in urethritis for its astringent effect. A serviceable lubricant for urethral instruments.

ADRENALIN SUPPOSITORIES (1:1000)

ADRENALIN AND CHLORETONE SUPPOSITORIES

In hemorrhoids, proctitis, rectal pruritus, or rectal fissure, these suppositories are very serviceable. Cone-shaped; melt at body temperature. Insert one suppository at night and one in the morning.

Write us for our booklet, "Adrenalin in Medicine."

PARKE, DAVIS & COMPANY

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Included in N. N. R. by the Council on Pharmacy and Chemistry of the American Medical Association

AMENORRHEA
DYSMENORRHEA
MENORRHAGIA

usually respond to treatment with

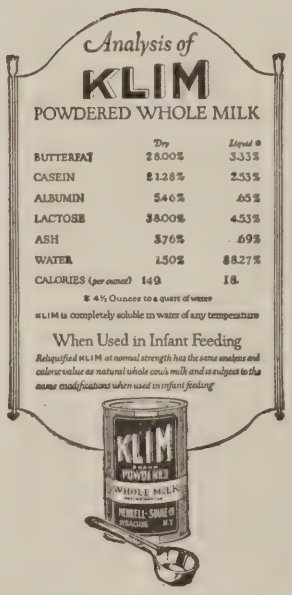
HORMOTONE

which acts directly through the endocrine apparatus concerned in the menstruation process.

Dose: 1 or 2 tablets three times daily.

G. W. CARNRICK CO.

420 Canal Street **New York, N. Y.**


Analysis of
KLIM
POWDERED WHOLE MILK
Dry
Liquid *
BUTTERFAT 28.00% 3.33%
CASEIN 21.28% 2.53%
ALBUMIN 5.46% .65%
LACTOSE 38.00% 4.53%
ASH 5.76% .69%
WATER 2.50% 88.27%
CALORIES (per ounce) 149 18.
* 4½ Ounces to a quart of water
KLIM is completely soluble in water of any temperature
When Used in Infant Feeding
Reliquified KLIM at normal strength has the same analysis and caloric value as natural whole cow's milk and is subject to the same modifications when used in infant feeding
KLIM
POWDERED
WHOLE MILK
MERRELL-SOULE CO.
SYRACUSE N.Y.

Recognizing the importance of scientific control, all contact with the laity is predicated on the policy that KLIM may be used in infant feeding only according to a physician's formula.

KLIM has a high nutritive and assimilative index

THE casein of KLIM, when attacked by digestive juices, coagulates in a flocculent mass rather than in the tough curds characteristic of natural milk.

The butterfat of KLIM retains the globular form of natural milk, but in a much finer division.

The result must be a speedier and more complete metabolism, less inclination to colic, and an absence of the regurgitation which frequently accompanies the feeding of natural milk.

Samples sent promptly upon request

To physicians using their letterheads we shall also send Scientific Literature on all Merrell-Soule laboratory controlled products for infant and invalid feeding.

MERRELL-SOULE CO., SYRACUSE, N. Y.
Also Makers of Merrell-Soule Powdered Protein Milk

Trustworthy!

The extent to which innumerable practitioners of medicine are today employing

Gray's Glycerine Tonic Comp.

(Formula Dr. John P. Gray)

whenever a dependable reconstructive tonic is called for, tells in no uncertain way of its therapeutic utility and gratifying efficiency.

During the thirty-five years this reliable tonic has been at the service of the profession, the quality of its ingredients and the unvarying character of the composite product have been consistently and faithfully maintained.

Thus it is easy to understand why the host of medical men who have learned how reliable it is in its character and results, not only take pains to order the original Gray's Glycerine Tonic Comp. (P. F. Co.), but also to see that their patients get no other!

Such care is well worth while, for it often measures the difference between success and failure.

The Purdue Frederick Co., 135 Christopher St., New York

Valentine's Meat-Juice

Whenever the **Stomach** from any cause **Rejects Food** or **Medicine, Valentine's Meat-Juice** demonstrates its **Ease** of **Assimilation** and **Power** to **Restore** and **Strengthen.** In the **Depressing Prostration** following **Influenza,** and in the **General Debility** of **Phthisis, Valentine's Meat-Juice** is recommended by many practitioners throughout the world as invaluable in their treatment.

Influenza *and* Phthisis.

Dr. Boulland, *Paris, France:* "In an attack of La Grippe accompanied by complete lassitude, I used VALENTINE'S MEAT-JUICE. With this preparation I established an excellent appetite and restored my strength very rapidly."

E. H. Walker, *Resident Medical Officer Boro Isolation Hospital and Boro Tuberculosis Sanatorium, Derby, England:* "I have pleasure in stating that I have found VALENTINE'S MEAT-JUICE valuable in the treatment of soldiers discharged from the Army suffering from Pulmonary Tuberculosis."

Physicians are invited to send for brochures containing clinical reports.

For sale by American and European Chemists and Druggists.

VALENTINE'S MEAT-JUICE COMPANY,

Richmond, Virginia, U. S. A.

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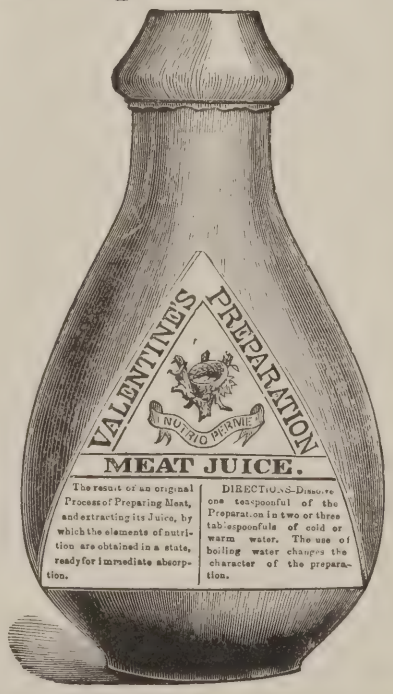

VALENTINE'S
PREPARATION
NUTRIO PERVIE
MEAT JUICE.
The result of an original Process of Preparing Meat, and extracting its Juice, by which the elements of nutrition are obtained in a state, ready for immediate absorption.
DIRECTIONS-Dissolve one teaspoonful of the Preparation in two or three tablespoonfuls of cold or warm water. The use of boiling water changes the character of the preparation.

Miscellany.

Amendments to the State Sanitary Code.—At a meeting of the Public Health Council held on October 9, 1924, regulation 53 of Chapter II of the State Sanitary Code was amended to take effect October 15, 1924, and to read as follows:

Regulation 53. Public funerals forbidden in certain cases. A public or a church funeral shall not be held of any person who has died of a communicable disease excepting anthrax, botulism, glanders, ophthalmia neonatorum (suppurative conjunctivitis of the newborn), paratyphoid fever, pneumonia. puerperal septicemia, rabies, tetanus, tuberculosis and typhoid fever, unless the consent of the local health officer has first been obtained.

Race Integrity Law.—Eugenical marriage regulations, as one phase of them is developed in the Virginia racial integrity law, were discussed before the Detroit meeting of the American Public Health Association by Dr. W. A. Plecker, State Registrar of Vital Statistics of Virginia. Dr. Plecker pointed out that the American race problem started within twelve years after the first English settlement in America, when negro slaves were introduced. The Virginia law prohibiting intermarriage of white and colored persons was placed on the books, he declared, because it had been shown that where different races came into contact there was always a tendency for them to intermix; and it was believed that our civilization depended upon keeping the purity of the white race intact. He urged the nineteen states that now permit legal marriage of whites with colored or mixed bloods, to adopt laws forbidding it.

The Public Health Service Studies Influenza and the Common Cold.—The common cold is the most prevalent illness in the United States and apparently many such colds are quite contagious, says the Surgeon General of the Public Health Service, few people failing to experience at least one attack during a twelve month period, while many persons have three or more attacks during that time. These facts are borne out by data recently secured by officers of the Public Health Service in an investigation of influenza and the minor respiratory diseases which they are conducting at the present time.

That large numbers of persons have colds each year is common knowledge but just what percentage of people, as a rule, have attacks and the average number of colds a year for each person have not been known, as the disease is not required to be reported by law, and, therefore, the morbidity records do not show that information.

In a preliminary report of the investigation that is now in progress, the Public Health Service shows that among a fairly representative group of persons only ten per cent. had no colds, while ninety per cent. had one or more colds during a five and a half month period; the rate for the group as a whole for that period being 1.9 cold for each person, or an annual rate of 3.7 cold a person should the same rate obtain throughout the year.

The cold was found to be the predominant form of respiratory attack. The relative frequency of symptoms was shown to be very much the same for all localities, and the epidemic outbreaks occurred apparently at about the same time of year in each locality. An outbreak of colds usually occurred in all localities in October, followed by a decline until the latter part of December, at which time another outbreak occurred.

It is now believed that there may be a closer correlation between the common cold and influenza than was formerly thought to exist. There seem to be cases of common cold and ordinary influenza which are almost indistinguishable clinically, and the bacteriological findings in the nose and throat of influenza sufferers and persons having a common cold are as far as the evidence goes practically the same. As a matter of fact, even in health the bacteria found in the minor respiratory diseases are nearly always present, which at once suggests that good resistance provided by physical fitness is an important line of defense, since a lowered vitality and lowered resistance favor infection. We can not depend upon physical fitness alone, however, as robust persons may apparently contract a cold from an infected person.

The investigation now being undertaken by the Public Health Service is the first nationwide study of influenza and colds ever made, and the final results are awaited with much interest, in the hope that further light will be shed on these affections which yearly cause much suffering, inconvenience, economic loss, and, in the case of influenza, even deaths, and which, as far as their cause and prevention are concerned, are up to the present time comparatively little understood.

Medical Fellowships Awarded.—Fourteen graduates in science have been awarded medical research fellowships by the National Research Council, for special training in teaching and important investigational work in the various branches of medicine and the medical sciences. The newly appointed fellows are in addition to the twenty-nine already at work under grants from the Medical Fellowship Board of the National Research Council. The actual research is conducted at various institutions throughout the world and about a fifth of the fellows study abroad. Whether a fellow is married or single the time of appointment determines in part the compensation that is granted him from the fellowship fund made available to the National Research Council by the Rockefeller Foundation and the General Education Board. An unmarried fellow receives $1,800 a year, while a married man receives $500 more. Many of the fellows before the expiration of their fellowships have been invited to fill desirable teaching and research positions.

Those who have just been appointed and the institutions where they will work are: Dr. Emily B. Carrier, Harvard University; Dr. Benjamin Freeman, University of Pennsylvania; Dr. M. S. Hollenberg, Johns Hopkins University; A. E. Mirsky, University of Cambridge, England; Dr. H. L. Pelham, Columbia University; Dr. Bernhard Steinberg, Western Reserve University; Dr. F. W. Stewart, Boston City Hospital; Dr. G. J. Strean, University of Iowa; Dr. C. H. Theines, Stanford University; Dr. J. L. Goforth, Dr. Erida L. Leuschner, and Dr. H. B. Van Dyke, place not yet determined; Dr. Frederick P. Gay, of Columbia University, is chairman of the Medical Fellowship Board.

In recommending an infant food —consider its nutritive value first

Cleanliness, digestibility, and palatability are also of importance, but without nutritive value any food would be useless as a body builder.

FOR the infant, breast milk furnishes all of the requirements mentioned. There is no need to seek further for a better food because no one has as yet been able to prepare a formula which can be considered anything other than a second choice.

As a breast milk substitute there is no better food for the infant than Eagle Brand Milk. For more than four years the largest child-feeding clinic in the history of the world has been maintained in the Near East, and Eagle Brand Milk has met every requirement for a complete milk food for the infants and older children throughout this period.

Reprints of clinical experiments with sweetened condensed milk will be sent upon request.

Write: WELFARE ORGANIZATION, BORDEN COMPANY
350 Madison Avenue, New York City

An invaluable aid for strict oral disinfection

THE oral cavity, being an ideal habitat for pathogenic micro-organisms, naturally forms an avenue of invasion for infection.

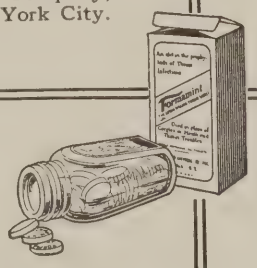
As a remarkably effective means of combating these micro-organisms, Formamint fulfills a definite and much needed function.

Being in tablet form, Formamint can be held in the mouth where it will dissolve slowly in the saliva, and give off nascent Formaldehyde which penetrates to the innermost recesses and folds of the mucous membrane. This germicidal action can be repeated at frequent enough intervals to make the treatment continuous.

Formamint tablets are harmless and pleasant to the taste. Their convenience of administration renders them a welcome and dependable agent for mouth and throat disinfection and prophylaxis.

We shall be pleased to place at the disposal of any member of the profession enough samples for a thorough test. Address The Bauer Chemical Company, 113 West 18th Street, New York City.

Formamint
GERM-KILLING THROAT TABLETS



Typhoid Carriers.—On October 1, 1924, the total number of typhoid carriers listed in New York State, exclusive of New York City and State hospitals, was ninety-six. Of this number twelve have been discovered and added to the list since January 1st. The histories of these carriers indicate that in several instances they had probably been the source of one or more cases in previous years.

Points in the histories of the twelve carriers discovered in the first nine months of the present year are as follows:

1. A housewife, living on a dairy farm, believed to have been the source of typhoid infection of two cases in 1922 and of five cases in 1923. Carrier had typhoid in 1878.
2. A dairy farmer, to whom typhoid in one and possibly two of his sons is ascribed. Had typhoid in 1917 or 1918.
3. A house mother in a children's home; an outbreak of twenty-three cases attributed to her as a source of infection. No history of typhoid.
4. A laborer on a dairy farm; said to have been the source of two cases on the farm where he was employed at the time of discovery and of two cases in a family which obtained milk from this farm. Had typhoid about 1900.
5. Source of typhoid infection in husband. Had typhoid in 1923.
6. After recovery from typhoid in 1923 became a chronic carrier.
7. A grandmother who infected a grandson after taking up residence in the home of the child's parents. Also possibly source of disease in visitor to household. Carrier had typhoid summer of 1923.
8. A nurse in a small hospital developed typhoid fever and an examination of the personnel showed that a temporary cook was a fecal carrier although she denied a history of typhoid fever. Our first information was to the effect that this woman, sixty-eight years of age, had been associated with but one previous case of typhoid although she had been employed as cook and housekeeper for a number of years. As this seemed too remarkable to credit without confirmation, further inquiry was made. This brought out that her husband had typhoid in 1901, a daughter-in-law and a neighbor in 1904, a grandson in 1907, a brother in 1920, and a woman with whom she lived in 1922. This carrier's employment in the hospital lasted only a week and she had been gone from the hospital nearly a month at the time specimens were obtained.
9. A child ten years old who infected his younger brother in May, 1924. Had typhoid in September, 1923.
10. Source of typhoid in a niece about six months after the carrier had become a member of the household. Had typhoid in 1904.
11. Source of typhoid infection of an aunt, father, a brother and a hired man at home and later was employed on a farm where her fiance subsequently came down with typhoid. Had typhoid in 1918. The aunt noted above was already known as a carrier, having been discovered in 1920 following typhoid in her nephew.
12. A meat dealer who had typhoid in 1918. Discovered incidentally to a search for the cause of sporadic cases occurring over a series of years in a rural community.

In addition to the carriers proved to be such by bacteriological examination, four other persons have been listed as suspected carriers. One of these was employed as the cook in a family on a farm which was visited by three persons who subsequently came down with typhoid fever in a nearby city. This carrier was lost track of before specimens could be obtained. Still another woman who gave a history of having had typhoid in the past is suspected of being the probable source of typhoid infection of her husband and grandchild. Specimens are to be submitted. A man who is known to have had typhoid fever some years ago is suspected as the probable source of a number of cases in a village in Central New York because of his social relations to them. Specimens are to be submitted. Another suspect is a man who was employed in the handling of food for public consumption. One fecal specimen from him has been found positive; other specimens are to be submitted for confirmation.

There were ninety carriers listed with the Division of Communicable Diseases on the first of January. In addition to the twelve newly discovered carriers added to the list, two carrers who had been out of the state returned. Two other carriers moved out of the state, one previously listed as a known carrier was transferred to the suspected list, four died, and one was successfully operated upon for removal of the gallbladder. Eight of the twelve carriers have been discovered as the result of efforts by local health officers, two by attending physicians and two by representatives of the state health department. The large proportion discovered by local health officers is a tribute to their interest and their abilities as epidemiologists.

Students' Health Closely Watched at Lehigh University.—Scenes reminiscent of the army cantonments of war times were enacted in the newly established Students' Health Department at Lehigh University during the past week. Each of the 1300 undergraduates was required to undergo a physical examination at the time of his registration. While a physical examination has long been required of every entering student at Lehigh, no such rigid tests have ever before been attempted. In fact, it is probable that no other institution has attempted to supervise the physical condition of its undergraduates as thoroughly as the Lehigh authorities have done this year.

Under the direction of Dr. R. C. Bull the examination was so efficiently organized that 610 men were thoroughly examined in three days. Each man was examined by ten specialists, passing from one to another in rapid succession. The first examination was for general appearance, height, weight and chest measurement. The applicant then passed to a test of his color vision. From here he was examined by the representative of the physical education department who made note of his natural posture, the condition of his joints and tests of his principal muscles. From these latter data corrective exercises will be prescribed for each individual. The fourth stop for the candidate was a dentist's chair where his teeth were thoroughly inspected by one of the six dentists of Bethlehem who volunteered their services for this work. Passing from the dentist, each man had a test made of his vision and hearing; then his nose and throat were examined by specialists in this field after which a surgical examination was made followed by inspection of his nervous system, chest and skin. Of the 610 men examined during the first three days, 383 were vaccinated for smallpox. The final test was the obtaining of a laboratory specimen after which the man was given his certificate.

The Department of Biology at the University cooperated with the Students' Health Service in the examination and all the vaccination was done under the direction of Professor Stanley Thomas of that department. The technic used was that employed by the U. S. Public Health Service at the New York Quarantine Station, which indicates whether the patient is immune to the disease.

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Health Problems of the Small City.—Public health in cities of twenty to thirty thousand population is far less efficiently safeguarded than it is in larger places, according to Prof. Ira V. Hiscock, of the Yale School of Medicine, who addressed the American Public Health Association, at Detroit. Prof. Hiscock has made a detailed study of smaller cities in Connecticut. In communities of this size, he pointed out, there is a lack of full time employees, trained in modern health practice. Too frequently the combination of job of health officer and school physician becomes a political "plum." The appropriations for official health work in over nine tenths of these towns are inadequate for the development of a complete health progress. Volunteer work by partly qualified nurses, cooperation by parents in health undertakings fostered through the public schools, and a gradual awakening of public feeling, promise possible improvement in the future.

Iodine Requirements for Water.—The needs of inland populations for iodine in diet or water supply, to prevent the incidence of goitre, were the subject of a report to the American Public Health Association by a committee on nutritional problems, under the chairmanship of Dr. Henry C. Sherman of Columbia University. Dr. Sherman pointed out that in regions near the seashore the iodine necessary for good health is borne inland to considerable distances as spray on the wind; but in regions remote from the sea or cut off by mountains, there arises a lack of iodine, and a consequent increase in the occurrence of goitre. Little iodine is necessary to prevent goitre —only about one part in three million parts of the body weight. This may be supplied, in inland places, by adding slight amounts to city water, by the addition of iodine salts to common salt or in other ways introducing it into food, or by using in the diet small quantities of sea plants which have been found to be rich in iodine.

Swedish Physician Says Tuberculosis Cures Diabetes.—The curious fact that diabetes can sometimes be cured by tuberculosis has led a prominent Swedish specialist, Dr. Erik Lundberg, to researches and discoveries which promise to have important effect on the future treatment of both diseases. This is of special interest in connection with the widely heralded use of insulin in the relief of diabetes. Proceeding on the theory that in the case of consumptive patients insulin, or something similar, is secreted outside of the pancreatic gland, Dr. Lundberg experimented with mice which he infected with tuberculosis and then dosed with insulin. He succeeded in producing insulin poisoning which led to instant death, except where he made injections of grape sugar along with the insulin. He found that the injection of about half a cubic centimetre of a solution of ten per cent. grape sugar resulted in immediate recovery from the insulin poisoning. From these experiments Dr. Lundberg has concluded that insulin is secreted by the tuberculous granular tissue, and that this substance is everywhere present in the human organism in every small quantities, where the secretion is greatly stimulated in some way under the influence of tuberculosis bacilli or their toxins.

New Publications Received.

(We shall publish in future full lists of books received, but we acknowledge no obligation to review them all. Nevertheless, so far as space permits, we shall review those in which we think our readers are likely to be interested.)

ARNOLD WATERLOW. A Life. By May Sinclair. New York: The MacMillan Company, 1924. Pp. 446.

THE ROCKEFELLER FOUNDATION. Annual Report, 1923. New York: The Rockefeller Foundation, 1924. Pp. 389.

POPULATION AND THE SOCIAL PROBLEM. By J. Swinburne, F.R.S. New York: The MacMillan Company, 1924. Pp. 377.

PEDIATRICS FOR NURSES. By John C. Baldwin, M.D. New York and London: D. Appleton and Company, 1924. Pp. 261.

AMERICA'S INTEREST IN WORLD PEACE. By Irving Fisher. New York and London: Funk and Wagnalls Company, 1924. Pp. 123.

FORTY-SIXTH ANNUAL REPORT OF THE DEPARTMENT OF HEALTH OF THE STATE OF NEW JERSEY, 1923. Jacob C. Price, M.D., Director. Pp. 325.

COMEDY AND CONSCIENCE AFTER THE RESTORATION. By Joseph Wood Krutch, Ph. D. New York: Columbia University Press, 1924. Pp. 270.

AIDS TO PSYCHIATRY. By W. S. Dawson, M.A., M.D., Oxon, M.R.C.P. Lond., D.P.M. New York: William Wood and Company, 1924. Pp. 309.

FUNDAMENTAL PRINCIPLES IN TREATMENT. By Harry Campbell, M.D., B.S., F.R.C.P. Lond. New York: William Wood and Company, 1924. Pp. 477.

STUDIES FROM THE ROCKEFELLER INSTITUTE FOR MEDICAL RESEARCH. Reprints, Volume L. New York: The Rockefeller Institute for Medical Research, 1924. Pp. 572.

THE INHERITANCE OF ACQUIRED CHARACTERISTICS. By Paul Kammerer. Translated by A. Paul Maerker-Branden. Illustrated. New York: Boni and Liveright, 1924. Pp. 414.

GROUP PSYCHOLOGY AND THE ANALYSIS OF THE EGO. By Sigmund Freud, M.D., LL.D. Authorized Translation by James Strachey. New York: Boni and Liveright, 1924. Pp. 134.

BEYOND THE PLEASURE PRINCIPLE. By Sigmund Freud, M.D., LL.D. Authorized Translation from the Second German Edition by C. M. J. Hubback. New York: Boni and Liveright, 1924. Pp. 90.

METHODS AND PROBLEMS OF MEDICAL EDUCATION. (First Series.) The Rockefeller Foundation, Division of Medical Education, Richard M. Pearce, Director. New York: The Rockefeller Foundation, 1924. Pp. 151.

THE JUDGE. A Play in Four Acts. By Maxim Gorky. Authorized Translation by Marie Zahrevsky and Barrett H. Clark, with an Introduction by the Author. New York: Robert M. McBride and Company, 1924. Pp. 105.

FUNDAMENTALS OF HUMAN PHYSIOLOGY. By R. G. Pearce, B.A., M.D. and J. J. R. Macleod, M.B., D. Sc., F.R.S. Assisted in the Third Edition by Dr. Norman B. Taylor. Third Edition. St. Louis: The C. V. Mosby Company, 1924. Pp. 349.

PECULIARITIES OF BEHAVIOR. Disorders of the Instincts and the Emotions. The Parapathiac Disorders. By Wilhelm Stekel. Authorized English Version by James S. Van Teslaar. Two Volumes. New York: Boni and Liveright, 1924. Pp. 328-341.

SAMMLUNG ZWANGLOSER ABHANDLUNGEN AUS DEM GEBEITE DER DERMATOLOGIE UND SYPHILIDOLOGIE. Herausgegeben von Prof. Dr. J. Jadassohn und Prof. Dr. F. Pinkus. III Band, Heft I, Der Ausfall des Kopfhaars und seine Behandlung, von Prof. Dr. med. Felix Pinkus. Neue Folge, Heft 5, Beziehungen der ekzematösen Erkrankungen zu inneren Leiden, von Hofrat Prof. Dr. S. Ehrmann. Neue Folge, Heft 6, Die Beziehungen der Genitalorgane zu Hautveränderungen, von Dr. Kurt Wiener. Halle, a.S.: Carl Marhold, 1924.

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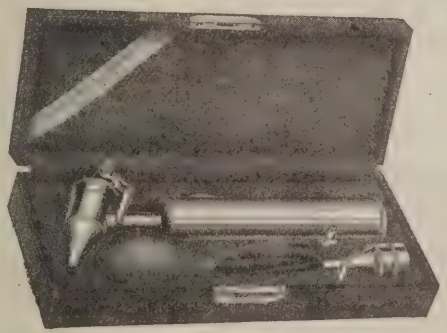

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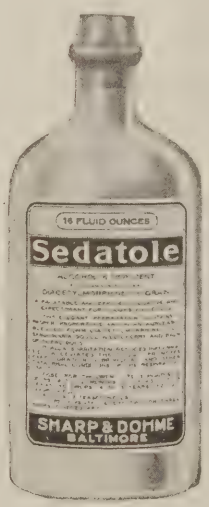

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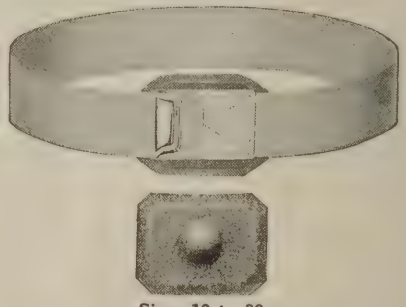

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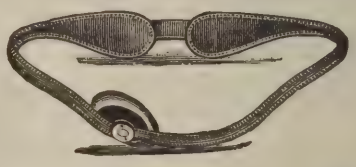

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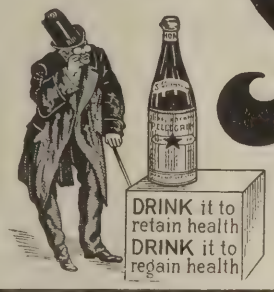

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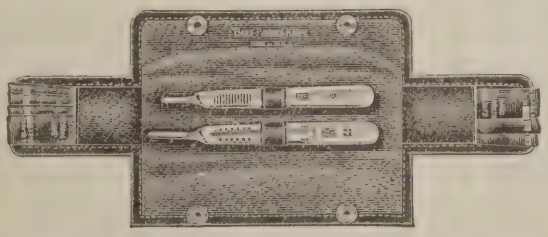

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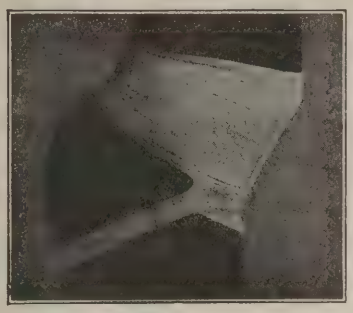

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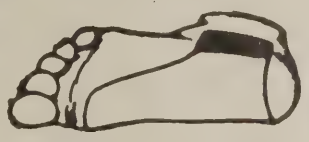

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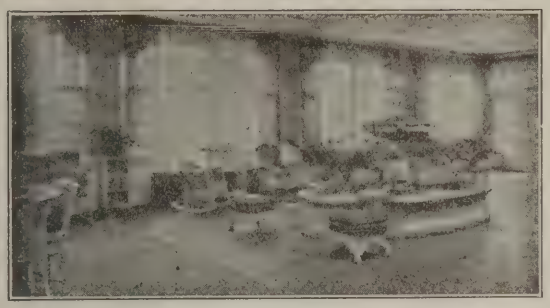

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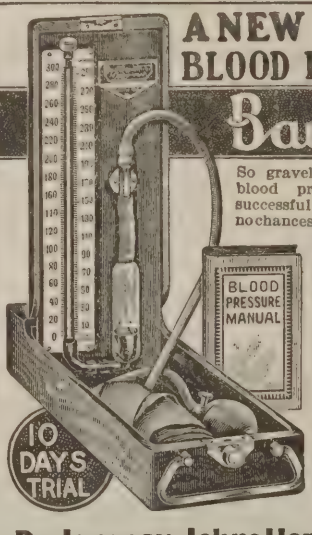

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INDEX TO ADVERTISERS

Abbott Laboratories, The 37
Akron Truss Co., The 40
Aloe Company, A. S. 52
American X-Ray Publ. Co. 50
Angier Chemical Company 36
Anglo-French Drug Company 13
Arlington Chemical Company 55
Aseptinol Manufacturing Company 45
Atblake Laboratories, Inc. 41

Bard-Parker, Inc. 45
Bell & Company 2
Bernagozzi, W. P. 45
Bilhuber, E., Inc. 42
Bischoff Co., Inc., Ernst 19, 35
Borden Company, The 31
Breitenbach, M. J., Company 26
Bridge Corset Co. 37
Bristol-Myers Company 47
Burnham Soluble Iodine Company 46

Campho-Phenique Company 26
Carnrick, G. W., Company 28
Central Drug Co. 24
Ciba Company 56
Collene Laboratories, Inc., The 46
Cook, Geo., & Co., Inc. 45

Dad Chemical Company 46
Dadirrian & Sons, Dr. 42
De Garmo Company, G. J. 43
Denver Chemical Mfg. Company 11
Donovan, Cornelius 46

Eimer & Amend 33
Electro Surgical Instrument Co. 35
Electro Therapeutic Institute 44

Farwell & Rhines 46
Fellows Medical Mfg. Company, Inc. 8
Fuller, George R., Company 47

General Radium Corporation 39
Gourd, Henry E. 38
Great Bear Springs 46

Haas Pharmacy 43
Harrower Laboratory, Inc., The 56
Hoffmann-La Roche Chemical Works 5

Intravenous Products Company, Inc. 25

Kalak Water Company 41
Katharmon Chemical Company 25
Kellogg Toasted Corn Flake Company 6
Kny-Scheerer Corp. 18

La Compagnie Gentin, Limitee 20
Lambert Pharmacal Company 21
Lehn & Fink, Inc. 40
Lilly, Eli & Co. 12

Manhattan Drug Company 46
Marvel Company 44
Mellins Food Company 22
Merrell-Soule Sales Corp. 28
Mulford Company, H. K. 14

National Pathological Laboratories 42
New York Intravenous Laboratory 22
New York Pharmaceutical Company 36
Nixon, Stuart & Barker 17

Oppenheimer, Dr. I. 52
O'Sullivan Rubber Company, Inc. 23

Parke, Davis & Company 27
Peacock Chemical Company 42
Peerless Truss Company 47
Pepsodent Company 9
Plessner Company, Paul 44
Pomeroy Company 44
Purdue Frederick Company, The 29

Quaker Oats Company 21

Radium Hospital 48
Reed & Carnrick 24
Reinschild Chemical Company 46
Riedel & Company, Inc. 39
Robes Intravenous Products, Inc. 43

Schering & Glatz, Inc. 20
Schieffelin & Company 33
Schuster, Inc., O. F. 47
Sharp & Dohme 38
Seydel Chemical Co. 15
Smith, Kline & French 7
Smith, Martin H., Company 47
Standard Oil Company (New Jersey) 10
Storm, Dr. Katherine L. 47
Sultan Drug Company 43

Valentine's Meat-Juice Company 29
Vapo-Cresolene Co. 40

Wampole & Company, Henry K. 55
Warner & Co., Inc., Wm. R. 4-31
Winthrop Chemical Company, Inc. 23
Wood & Company, William 16

INSTITUTIONS AND SANITARIUMS

Aurora Health Farm 48
Barnes 51
Belle Mead 50
Bond, Dr. G. F. M. 50
Brook's House 48
Brook's Sanitarium 48
Elm Hill 48
Fair Oaks 49
Givens 49
Heath's Rest Cure 48
Hydriatic Institute 48
Idylease 49
Interpines 50
Jefferson Medical College 50
Kellogg's House 48
Lloyd's Sanitarium, Dr. 52
McFarland, Dr. D. W. 48
Mount Royal Gardens 52
River Crest 51
Sanford Hall 50
Spring Hill 51
Stammerers' Institute 48
Steuben Sanatorium 49
Waukesha 51
West Hill 50
Woodley Hospital 50

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